1). Evaluate.

$$\frac{12}{-12}$$

A) 0 B) 1

C) - 12 D) -1

0

2). Evaluate.

$$0 \div 9 + 3 \cdot 6$$

A) 72 B) 18

C) 27 D) Undefined

1

3). Evaluate

$$\frac{133 + 7}{3^2 - 4}$$

A) 70 B) 42

C) 26 D) 28

2

4). Evaluate

$$2\frac{5}{8} \cdot 8$$

A) 16 B) $10\frac{5}{8}$

C) 21 D) 128

3

4). Evaluate

$$\frac{2^2 - (-10)}{2}$$

A) - 14 B) 7

C) 14 D) - 5

4

5). Find the prime factorization.

42

A) $3^2 \cdot 2$ B) $6 \cdot 7$

C) $2 \cdot 3 \cdot 7$ D) $2^2 \cdot 7$

5

6). Simplify.

$$3\sqrt{16} + 2\sqrt{25}$$

A) 22 B) 9

C) 98 D) 14

6

7). Simplify.

$$\left[\frac{7}{9} + \frac{8}{9}\right] \cdot \frac{9}{12}$$

A) $\frac{5}{4}$ B) $\frac{2}{9}$

C) $\frac{4}{5}$ D) $\frac{45}{4}$

7

8). Evaluate

$$\frac{5(2+1)-6(1+1)}{5(4-2)-2^3}$$

A) $\frac{1}{2}$ B) $\frac{9}{2}$

C) $\frac{3}{2}$ D) $\frac{3}{8}$

TEXAS A&M UNIVERSITY COMMERCE

9). Simplify.

$$\frac{1}{3}+\frac{8}{12}+\frac{4}{6}$$

A) $\frac{14}{3}$ B) $\frac{5}{3}$

C) $\frac{13}{12}$ D) $\frac{10}{3}$

TEXAS A&M UNIVERSITY COMMERCE

10). Find the indicated angle.

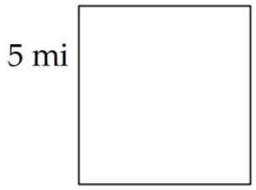
Find the complement of 43°.

A) 137° B) 227°

C) 317° D) 47°

TEXAS A&M UNIVERSITY COMMERCE

11). Find the area of the square.



A) 21 sq mi B) 28 sq mi

C) 25 sq mi D) 20 sq mi

TEXAS A&M UNIVERSITY COMMERCE

12). Reduce to the lowest terms.

$$\frac{63}{72}$$

A) $\frac{7}{9}$ B) $\frac{7}{8}$

C) $\frac{9}{8}$ D) $\frac{63}{72}$

13). Simplify.

$$\frac{20 \times 10^{-9}}{5 \times 10^{-8}}$$

A) 8×10^{-1} B) 4×10^{-1}

C) 8×10^{-17} D) 4×10^{-17}

14). Perform the indicated operations.

$(7x^2 - 6x - 2) + (-4x^2 - 2x + 9)$

A) $3x^2 - 8x + 7$

B) $-3x^2 + 8x + 7$

C) $11x^2 - 8x + 11$

D) $11x^2 - 8x - 11$

15). Multiply.

$-2z^2(8z^2 + 4z - 6)$

A) $-16z^4 - 8z + 12$

B) $-16z^4 - 8z^3 + 12z^2$

C) $-16z^4 - 8z^2 + 12$

D) $6z^4 + 2z - 8$

16). Perform the indicated operation.

$$(7n^2)(3n^6)$$

A) $10n^{12}$ B) $21n^{12}$

C) $10n^8$ D) $21n^8$

TEXAS A&M UNIVERSITY COMMERCE

Northeast Texas Algebra Competition

16

17). Solve

$$2(x + 6) = 6 - 4(x + 6)$$

A) $\frac{1}{6}$ B) 30

C) 5 D) - 5

TEXAS A&M UNIVERSITY COMMERCE

Northeast Texas Algebra Competition

17

18). Solve the equation for the specified variable.

$$A = \frac{1}{2}bh; \text{ solve for } b$$

A) $b = \frac{h}{2A}$ B) $b = \frac{2A}{h}$

C) $b = \frac{Ah}{2}$ D) $b = \frac{A}{2h}$

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Northeast Texas Algebra Competition

18

19). Multiply.

$$(y + 7)(y - 7)$$

A) $y^2 - 14y - 49$

B) $y^2 + 14y + 49$

C) $y^2 + 49$

D) $y^2 - 49$

TEXAS A&M UNIVERSITY COMMERCE

Northeast Texas Algebra Competition

19

20). Multiply.

$(w - 6)^2$

A) $w + 36$

B) $w^2 - 12w + 36$

C) $36w^2 - 12w + 36$

D) $w^2 + 36$

21). Solve

60% of the doctors in a hospital are female. If there are 40 doctors altogether, how many doctors are female?

A) 16 doctors

B) 24 doctors

C) 67 doctors

D) 150 doctors

22). Simplify.

$(3x^5y^{-6})(5x^{-1}y)$

A) $\frac{15x^4}{y^5}$

B) $\frac{15x^6}{y^7}$

C) $15x^4y^7$

D) $\frac{2x^4}{y^5}$

23). Determine the slope.

$y = -\frac{1}{4}x + 5$

A) $m = \frac{1}{4}$

B) $m = 5$

C) $m = -\frac{1}{4}$

D) $m = -5$

24). Solve.

A shipping company has determined that their drivers in Montana on average travel 90 miles on a single delivery route for mail order products. This is five times the distance of an average route for their drivers in New Jersey. How far, on average, is the route in New Jersey?

A) 450 mi B) 18 mi

C) 90 mi D) 180 mi

25). Factor.

$$4a^2 - 32a + 28$$

A) $4(a^2 + 8a - 7)$

B) $4(a^2 - 8a + 7)$

C) $4(a^2 - 32a + 28)$

D) $4(a^2 - 32a + 7)$

26). Multiply.

$$(y - 4)(y^2 + 4y - 7)$$

A) $y^3 + 8y^2 + 23y - 28$

B) $y^3 - 8y^2 - 23y + 28$

C) $y^3 + 9y - 28$

D) $y^3 - 23y + 28$

27). Factor.

$$7a^2b - 35ab^2$$

A) $7ab(a - 35b)$ B) $7a^2(b - 5b^2)$

C) $7ab(a - 5b^2)$ D) $7ab(a - 5b)$

28). Simplify.

$$\frac{x^7y^{-7}}{x^{-3}y}$$

A) $\frac{x^4}{y^8}$ B) $\frac{x^4}{y^6}$

C) $\frac{x^{10}}{y^8}$ D) $\frac{x^{10}}{y^6}$

TEXAS A&M UNIVERSITY COMMERCE

29). Simplify.

$$\left[\frac{4p^{-2}v^2}{s^{-4}}\right]^3$$

A) $\frac{64s^{12}}{p^6v^6}$ B) $\frac{4v^6s^{12}}{p^6}$

C) $-\frac{4p^6v^6}{s^{12}}$ D) $\frac{64v^6s^{12}}{p^6}$

TEXAS A&M UNIVERSITY COMMERCE

31). Factor.

$5x^2 + 8x - 4$

A) (2 - 5x)(5x - 2)
B) (x + 2)(5x - 2)
C) (5x - 6)(5x - 2)
D) (x - 2)(5x - 2)

TEXAS A&M UNIVERSITY COMMERCE

32). Evaluate.

$(x + 4y)^2$ for $x = 3, y = 2$

A) 11 B) 49
C) 121 D) 22

TEXAS A&M UNIVERSITY COMMERCE

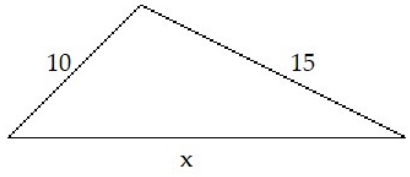
33). Solve.

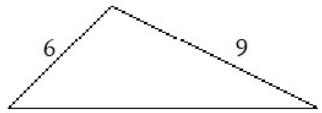
A construction company builds a swimming pool with a perimeter of 56 m. The length is 4 m more than the width. Find the dimensions of the swimming pool?

A) 11 m × 12 m B) 16 m × 12 m

C) 16 m × 4 m D) 21 m × 12 m

34). Find the missing side *x*.





A) x = 19

B) x = 25

C) x = 20

D) x = 12

35). Write in lowest terms.

$$\frac{8x + 24}{8x - 24}$$

A) $\frac{x + 3}{x - 3}$ B) -1

C) 1 D) Cannot reduce

36). Solve.

$$\frac{x}{3} - \frac{x}{8} = 4$$

A) 24 B) $\frac{96}{5}$

C) 32 D) 12

37). Evaluate.

$$64^{1/3}$$

A) 12 B) 768

C) 256 D) 4

38). Simplify.

$$\frac{9 - x}{x^2 - 81}$$

A) $\frac{1}{x - 9}$ B) $-\frac{1}{x + 9}$

C) $\frac{1}{x + 9}$ D) $-\frac{1}{x - 9}$

39). Solve.

$$\sqrt{q + 4} = 8$$

A) 68 B) 64

C) 60 D) 144

40). Determine the slope.

$$x = 6$$

A) m = 6 B) m = - 6

C) not defined D) m = 0

41). Solve and write interval notation

$-10 < -5x \leq 10$

A) (-2, 2) B) [-2, 2]

C) [-2, 2) D) (-2, 2]

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42). Simplify.

$\sqrt[3]{-125}$

A) Not a real number
B) 5
C) - 11.18
D) - 5

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43). Simplify.

$\sqrt[3]{64x^7y^5}$

A) $5xy\sqrt[3]{xy^2}$ B) $4xy\sqrt[2]{xy^2}$

C) $4xy\sqrt[3]{xy}$ D) $4x^2y\sqrt[3]{xy^2}$

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42

44). Simplify.

$$\frac{4}{x^2y} + \frac{2}{xy^2}$$

A) $\frac{2y + 4x}{x^2y^2}$ B) $\frac{4y + 2x}{x^2y^2}$

C) $\frac{4y + 2x}{x^3y^3}$ D) $\frac{2y + 4x}{x^3y^3}$

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43

45). Find the domain.

$$f(x) = \sqrt{3x + 1} + 7$$

A) $\left[-\frac{1}{3}, \infty\right)$

B) $\left(-\infty, -\frac{1}{3}\right]$

C) $\left(-\infty, \frac{1}{3}\right]$

D) $\left[\frac{1}{3}, \infty\right)$

TEXAS A&M UNIVERSITY COMMERCE

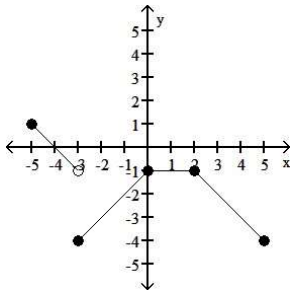
46). Determine where the function is increasing, decreasing, and constant.

A) Increasing: (-3, 0); Decreasing: (-5, -3) and (2, 5); Constant: (0, 2)

B) Increasing: (-3, -1); Decreasing: (-5, -2) and (2, 4); Constant: (-1, 2)

C) Increasing: (-5, -3) and (2, 5); Decreasing: (-3, 0); Constant: (0, 2)

D) Increasing: (-3, 1); Decreasing: (-5, -3) and (0, 5); Constant: (1, 2)



TEXAS A&M UNIVERSITY COMMERCE

47). Solve.

$$(4x + 1)(4x + 5) = 0$$

A) $\frac{1}{4}, \frac{5}{4}$

B) $-\frac{5}{8}, \frac{5}{8}$

C) $-\frac{1}{4}, -\frac{5}{4}$

D) $-\frac{1}{16}, -\frac{1}{16}$

TEXAS A&M UNIVERSITY COMMERCE

48). Simplify.

$$\frac{x + 4y}{x + y} + \frac{2x - y}{x + y}$$

A) $\frac{3x + 4y}{x + y}$

B) 3

C) $\frac{3}{2}$

D) $\frac{3}{x + y}$

TEXAS A&M UNIVERSITY COMMERCE

49). Simplify.

$$\frac{\frac{x^6}{4y^9}}{\frac{x^2}{y^5}}$$

A) $\frac{x^4}{4y^4}$ B) $\frac{x^4}{y^4}$

C) $\frac{x^8}{4y^{14}}$ D) $\frac{x^4}{4y^{14}}$

TEXAS A&M UNIVERSITY COMMERCE

50). Write in slope-intercept form

$$x - 9y = 8$$

A) $y = \frac{1}{9}x - 8$ B) $y = 9x - 8$

C) $y = x - \frac{8}{9}$ D) $y = \frac{1}{9}x - \frac{8}{9}$

TEXAS A&M UNIVERSITY COMMERCE

51). Simplify.

$$2i(6 - 6i)$$

A) $-12 + 12i$ B) $12 + 12i$

C) $12 - 12i$ D) $12i - 12i^2$

TEXAS A&M UNIVERSITY COMMERCE

52). Solve.

$$5x2 = 30x$$

A) 5, 6 B) 15

C) 0, 6 D) 6

TEXAS A&M UNIVERSITY COMMERCE

53). Find the inverse of the relation.

{(10, 15), (16, 4), (-13, -7)}

A) {(10, 15), (16, 4), (-13, -7)}
B) {(15, 10), (-13, 16), (-7, 4)}
C) {(10, 4), (10, 16), (-7, -13)}
D) {(15, 10), (4, 16), (-7, -13)}

TEXAS A&M UNIVERSITY COMMERCE

54). Find the vertical asymptote(s) .

$$g(x) = \frac{4}{x(x+7)}$$

A) $x = -7, x = 4$ B) $x = -7, x = 0$
C) $x = -7, x = 1$ D) $y = -7, x = 0$

TEXAS A&M UNIVERSITY COMMERCE

55). Find the value.

$$\log_{10} 0.01$$

A) 0.01 B) -2
C) -0.02 D) 2

TEXAS A&M UNIVERSITY COMMERCE

56). Expand.

$$\log\frac{4x7}{y2}$$

A) $\log 4 + (\log x)^7 - (\log y)^2$
B) $\log 4 \cdot 7 \log x - 2 \log y$
C) $\log 4 + 7 \log x - 2 \log y$
D) $\log (4 + x^7 - y^2)$

TEXAS A&M UNIVERSITY COMMERCE

57). Solve

$$4^{(1 + 2x)} = 64$$

A) 4 B) 1

C) 16 D) -1

58). Expand

The value of a particular investment follows a pattern of exponential growth. In the year 2000, you invested money in a money market account. The value of your investment t years after 2000 is given by the exponential growth model $A = 1500e^{0.045t}$.

By what percentage is the account increasing each year?

A) 5.0% B) 4.8%

C) 5.1% D) 4.5%

59). Solve the system of linear equations.

$$x + y = -6$$
$$x - y = 12$$

A) {(3, 9)} B) {(6, 3)}

C) {(3, -9)} D) {(6, -9)}

60). Solve

Jacie is considering a job that offers a monthly starting salary of $2500 and guarantees her a monthly raise of $110 during her first year on the job.

Find her monthly salary at the end of her first year.

A) $3820 B) $3710

C) $3710 D) $3600

60). Evaluate.

$$\frac{8-6}{6-8}$$

A) $\frac{4}{3}$ B) 2

C) -1 D) $-\frac{4}{3}$

TEXAS A&M UNIVERSITY COMMERCE

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60

61). Evaluate.

$$-10\left|-\frac{5}{4}\right|$$

A) $-\frac{5}{2}$ B) $\frac{5}{2}$

C) $-\frac{25}{2}$ D) $\frac{25}{2}$

TEXAS A&M UNIVERSITY COMMERCE

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62). Evaluate

$$(0.09)^2$$

A) 0.045 B) 0.0081

C) 0.18 D) 0.81

TEXAS A&M UNIVERSITY COMMERCE

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62

63). Evaluate

$$\frac{0^4}{(-4)^0}$$

A) 0 B) -1

C) -4 D) 1

TEXAS A&M UNIVERSITY COMMERCE

Northeast Texas Algebra Competition

63

64). Evaluate

$$\sqrt[3]{-64}$$

A) 4

B) Not a real number

C) -4

D) 8

Northeast Texas Algebra Competition

64

65). Find the value of the expression.

$$(-8)^2 - (-2)^3$$

A) 56 B) -56

C) -72 D) 72

Northeast Texas Algebra Competition

65

66). Perform the indicated operations

$$\frac{32 \cdot (17 - 14) - 6}{3^2 - 3}$$

A) 15 B) 16

C) 17 D) 30

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66

67). Simplify the expression.

$$\sqrt{25} - \sqrt{64}$$

A) -3 B) $-\sqrt{3}$

C) -1.5 D) $-\sqrt{39}$

Northeast Texas Algebra Competition

67

68). Evaluate

$$\frac{3}{4} + \left[-\frac{1}{12}\right]$$

A) $\frac{1}{4}$ B) $\frac{2}{3}$

C) $\frac{1}{6}$ D) 2

TEXAS A&M UNIVERSITY COMMERCE

69). Simplify the expression.

$$\frac{\frac{1}{6} \cdot 18 - 7}{7 + \frac{1}{5} \cdot 10}$$

A) $-\frac{4}{9}$ B) $\frac{10}{9}$ C) $\frac{4}{9}$ D) $-\frac{4}{5}$

TEXAS A&M UNIVERSITY COMMERCE

70). Simplify.

$$\frac{5^{-2}}{2^{-3}}$$

A) $\frac{125}{16}$ B) $\frac{8}{25}$

C) $\frac{16}{125}$ D) $\frac{25}{8}$

TEXAS A&M UNIVERSITY COMMERCE

71). Evaluate

$$\frac{6}{7} \div \left[1 + \frac{1}{4}\right]$$

A) $\frac{4}{35}$ B) $\frac{24}{35}$ C) $\frac{6}{7}$ D) 1

TEXAS A&M UNIVERSITY COMMERCE

72). Simplify the expression.

$$8(5x + 4) - 7(x + 1)$$

A) $65x$ B) $-16x + 25$

C) $33x + 5$ D) $33x + 25$

Northeast Texas Algebra Competition

72

73). Simplify the expression.

$$9x^4(-7x^6 - 12x^4)$$

A) $-171x^4$ B) $-63x^{10} - 12x^4$

C) $-171x^{10} - 171x^8$ D) $-63x^{10} - 108x^8$

Northeast Texas Algebra Competition

73

74). Solve the equation.

$$9y - 1 = 8 + 7y - 10y$$

A) $\frac{4}{3}$ B) $-\frac{16}{3}$

C) $-\frac{4}{3}$ D) $\frac{3}{4}$

Northeast Texas Algebra Competition

74

75). Solve the equation.

$$1.7x + 2 = -1.2 + 3.3x$$

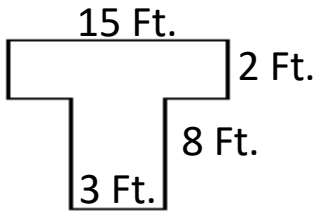
A) 1.5 B) 2

C) 1.0 D) -5

Northeast Texas Algebra Competition

75

76). Find the perimeter



A) 50 ft B) 38 ft C) 54 ft D) 25 ft

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77). Solve

Find 6% of 3000.

A) 18 B) 180

C) 18,000 D) 1800

TEXAS A&M UNIVERSITY COMMERCE

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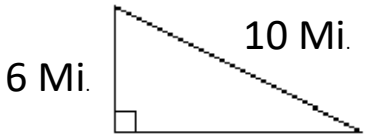
77

78). Find the unknown side of the right triangle.



A) 7 mi B) 8 mi

C) 9 mi D) 10 mi

TEXAS A&M UNIVERSITY COMMERCE

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78

79). Simplify.

$$(-7x^2y)(-9x^3y^6)$$

A) $-63x^5y^6$ B) $63x^6y^6$

C) $-63x^5y^7$ D) $63x^5y^7$

TEXAS A&M UNIVERSITY COMMERCE

Northeast Texas Algebra Competition

79

80). Simplify

$$(4p^3s^4)^2(s^4)$$

A) $16p^5s^{32}$ B) $4p^6s^{12}$

C) $16p^5s^{10}$ D) $16p^6s^{12}$

Northeast Texas Algebra Competition

80

81). Simplify. Write with positive exponents

$$(x^{-3}y^3)^{-1}$$

A) $\frac{1}{x^3y^3}$ B) $\frac{x^3}{y^3}$

C) $\frac{x^{-4}}{y^2}$ D) $\frac{y^2}{x^{-4}}$

Northeast Texas Algebra Competition

81

82). Simplify.

$$\left(\frac{x^{7t}}{x}\right)^3$$

A) x^{21t-3} B) $3x^{7t}$

C) $3x^{7t-3}$ D) x^{21t}

Northeast Texas Algebra Competition

82

83). Simplify. Write with positive exponents

$$\left(\frac{xy^3}{x^3y}\right)^{-2}$$

A) $\frac{x^4}{y^4}$ B) $\frac{1}{x^5y^7}$

C) $\frac{y^4}{x^4}$ D) $\frac{1}{x^8y^8}$

Northeast Texas Algebra Competition

83

84). Solve.

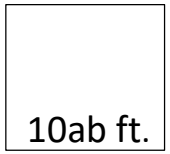
The **cost** C to produce x number of tennis rackets is $C = 130 + 15x$. The **revenue** R is given by $R = 20x$. Find how many tennis rackets the manufacturer needs to produce and sell to **break even**.

A) 31 tennis rackets B) 21 tennis rackets

C) 26 tennis rackets D) 13 tennis rackets

TEXAS A&M UNIVERSITY COMMERCE

85). Find the area.



A) $200a^2b^2\ ft^2$ B) $100a^2b^2\ ft^2$

C) $40a^2b^2\ ft^2$ D) $20a^2b^2\ ft^2$

TEXAS A&M UNIVERSITY COMMERCE

86). Simplify.

$$\frac{3a^{-6}b^5}{24a^{-12}b^7}$$

A) $\frac{b^3}{8a^6}$ B) $-\frac{a^5}{8b^3}$

C) $\frac{a^6}{8b^2}$ D) $\frac{8a^6}{b^2}$

TEXAS A&M UNIVERSITY COMMERCE

87). Complete each ordered-pair solutions of the given equation.

$x + y = 26$

(, 18), (, -10), (, 0)

A) (**44**, 18) , (**36**, -10), (**26**, 0)

B) (**8**, 18) , (**36**,-10), (**26**, 0)

C) (**8**, 18) , (**16**, -10), (**0**, 0)

D) (**44**, 18) , (**16**, -10), (**26**, 0)

TEXAS A&M UNIVERSITY COMMERCE

88). Find the slope of the line.

$$5y - 4x = 34$$

A) $-\frac{4}{5}$ B) $-\frac{5}{4}$

C) $\frac{34}{5}$ D) $\frac{4}{5}$

Northeast Texas Algebra Competition

88

89). Multiply.

$$(4x - 9)(4x - 9)$$

A) $4x2 - 73x + 81$

B) $4x2 - 72x - 73$

C) $16x2 + 81x - 72$

D) $16x2 - 72x + 81$

Northeast Texas Algebra Competition

89

90). Multiply.

$$(x + 1)(x^2 - x + 1)$$

A) $x^3 - 1$

B) $x^3 + 1$

C) $x^3 + 2x^2 + 2x + 1$

D) $x^3 - 2x^2 - 2x - 1$

Northeast Texas Algebra Competition

90

91). Multiply.

$$(\sqrt{5} + 1)(\sqrt{5} - 1)$$

A) $4 + 2\sqrt{5}$ B) 4

C) $4 - 2\sqrt{5}$ D) 6

Northeast Texas Algebra Competition

91

92). Simplify.

$$\frac{\frac{16}{5x}}{\frac{4}{15x}}$$

A) $\frac{1}{12}$ B) $\frac{x^2}{12}$

C) 12 D) $12x^2$

Northeast Texas Algebra Competition

92

93). Factor.

$$2x^5y - 16x^3$$

A) $2x^3y(x^2 - 8)$

B) $x^3(2x^2y - 16)$

C) $2x^3(x^2y - 8)$

D) $2x^4(xy - 8x)$

Northeast Texas Algebra Competition

93

94). Factor.

$$2x^2 + 23x + 11$$

A) $(2x - 1)(x - 11)$

B) $(2x + 1)(x + 11)$

C) $(2x + 11)(x + 1)$

D) prime

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95). Factor.

$$81x2 - 4y^2$$

A) $(9x + 2y)(9x - 2y)$

B) prime polynomial

C) $(9x + 2y)2$

D) $(9x - 2y)2$

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96). Factor.

$$x^4 - 36$$

A) $(x^2 + 6)(x^2 - 6)$

B) $(x^2 - 6)^2$

C) prime polynomial

D) $(x^2 + 6)^2$

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97). Evaluate the expression or indicate that the root is not a real number.

$$\sqrt{(-10)^2}$$

A) 100 B) 10

C) -10 D) Not a real number

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98). Simplify.

$$\frac{21x^2 - 7x}{9x^3 - 3x^2}$$

A) $\frac{7x}{3}$ B) $\frac{7}{3x}$

C) $\frac{7}{3x^2}$ D) $\frac{3x}{7}$

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99). Multiply

$$\frac{2x^3}{3} \cdot \frac{18}{x^9}$$

A) $\frac{12}{x^3}$ B) $\frac{1}{12x^6}$

C) $12x^6$ D) $\frac{12}{x^6}$

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100). Add and Simplify

$$\frac{a}{6b} + \frac{b}{13a}$$

A) $\frac{6a^2 + 13b^2}{78ab}$ B) $\frac{a^2 + b^2}{78ab}$

C) $\frac{13a + 6b}{78ab}$ D) $\frac{13a^2 + 6b^2}{78ab}$

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101). Find the difference.

$$\frac{3}{11x} - \frac{x}{x - 8}$$

A) $\frac{-x^2 + 3x - 24}{11x(x - 8)}$ B) $\frac{3 - x}{11x(x - 8)}$

C) $\frac{-11x^2 + 3x - 24}{11x(x - 8)}$ D) $\frac{-11x^2 + 3x - 8}{11x(x - 8)}$

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102). Solve the equation.

$$\frac{5}{x - 4} = \frac{4}{x + 6}$$

A) -10 B) $-\frac{46}{9}$

C) 14 D) -46

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103). Simplify.

$$\sqrt{50x^2}$$

A) $5x\sqrt{2}$ B) $2x^2\sqrt{5}$

C) $5\sqrt{2x}$ D) $50x$

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104). Solve.

$$3\sqrt{x+2} = 9$$

A) 34 B) 11

C) 7 D) empty set solution

104

105). Solve.

$$(3x + 5)2 = 10$$

A) $\frac{5 \pm \sqrt{10}}{3}$ B) $-5, \frac{5}{3}$

C) $\frac{-5 \pm \sqrt{10}}{3}$ D) $\frac{\sqrt{10} \pm 5}{3}$

105

106). Solve.

$$(9x + 1)(5x - 2) = 0$$

A) 8, 3 B) $9, \frac{5}{2}$

C) $\frac{1}{9}, -\frac{2}{5}$ D) $-\frac{1}{9}, \frac{2}{5}$

106

107). Solve.

$$x^2 + 2x - 24 = 0$$

A) -6, 1 B) -6, 4

C) 6, -4 D) 6, 4

107

108). Determine whether the relation is a function.

{(-2, -9), (3, -5), (6, 6), (8, 1), (11, 2)}

A) Function

B) Not a function

108

109). Multiply

$$(12i)(15i)$$

A) $0 + 180i$ B) $180 + 0i$

C) $-180 + 0i$ D) $0 - 180i$

109

110). Divide.

$$\frac{6}{2+i}$$

A) $4 + 2i$ B) $4 - 2i$

C) $\frac{12}{5} + \frac{6}{5}i$ D) $\frac{12}{5} - \frac{6}{5}i$

110

111). Find the degree.

$$f(x) = \pi x^4 + 7x^3 + 3$$

A) 3 B) 4

C) 1 D) π

111

112). Find the minimum or maximum value of the quadratic function.

$$f(x) = x^2 - 2x - 5$$

A) maximum; $(-6, 1)$

B) minimum; $(1, -6)$

C) maximum; $(1, -6)$

D) minimum; $(-6, 1)$

112

113). Find the set of possible rational zeros for the function.

$$f(x) = x^3 - 10x^2 + 5x - 24$$

A) $\{\pm1, \pm2, \pm3, \pm4, \pm6, \pm8, \pm12, \pm24\}$

B) $\{\pm1, \pm2, \pm3, \pm4, \pm24\}$

C) $\left\{\pm1, \pm\frac{1}{2}, \pm2, \pm3, \pm4, \pm6, \pm8, \pm12, \pm24\right\}$

D) $\{\pm1, \pm2, \pm3, \pm4, \pm6, \pm12, \pm24\}$

113

114). Find the requested inverse.

If $f(5) = 2$, find $f^{-1}(2)$

A) 2 B) 5

C) 1 D) 8

114

115). Evaluate.

$$\log_6 \frac{1}{\sqrt{6}}$$

A) $-\frac{1}{2}$ B) $\frac{1}{6}$

C) $-\frac{1}{6}$ D) $\frac{1}{2}$

115

116). Expand

$$\log_6\left[\frac{x-6}{x^8}\right]$$

A) $8\log_6 x - \log_6 (x-6)$

B) $\log_6 (x-6) + 8\log_6 x$

C) $\log_6 (x-6) - 8\log_6 x$

D) $\log_6 (x-6) - \log_6 x$

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117). Expand

$$\log_5\left[\frac{125}{\sqrt{x-1}}\right]$$

A) $3 - \frac{1}{2}\log_5(x-1)$

B) $\log_5 125 - \log_5 \sqrt{x-1}$

C) $3\log_5 5 - \frac{1}{2}\log_5 (x-1)$

D) $3 - \log_5 \sqrt{x-1}$

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118). Evaluate the given function composition.

$$f(x) = x^2 + 3x \ , \ g(x) = 5x - 4$$

A) $(g \circ f)(-3) = -4$

B) $(g \circ f)(-3) = 304$

C) $(g \circ f)(-3) = -0$

D) $(g \circ f)(-3) = 0$

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119). Solve

$$49^{x+8} = 7^{4x}$$

A) $\{8\}$

B) $\left\{\frac{10}{3}\right\}$

C) $\left\{-\frac{56}{3}\right\}$

D) No solution

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