

Quarter 2 Final Review

Date _____ Period _____

Simplify each expression.

$$1) (6a^2 + 5a^4 + 3) - (5a^2 + 2a^4 + 8a)$$

$$3a^4 + a^2 - 8a + 3$$

$$2) (4x - 5 + 2x^3) - (8x^3 + 3 + x)$$

$$-6x^3 + 3x - 8$$

Find each product.

$$3) (2x + 6)(x + 3)$$

$$2x^2 + 12x + 18$$

$$4) (7n + 3)(2n + 6)$$

$$14n^2 + 48n + 18$$

Divide.

$$5) (3m^3 - 26m^2 - 38m - 23) \div (m - 10)$$

$$3m^2 + 4m + 2 - \frac{3}{m - 10}$$

$$6) (x^3 + 17x^2 + 77x + 65) \div (x + 10)$$

$$x^2 + 7x + 7 - \frac{5}{x + 10}$$

Solve each equation. Remember to check for extraneous solutions.

$$7) \sqrt{\frac{b}{6}} + 4 = 6$$

$$\{24\}$$

$$8) \sqrt{-2 + 3x} = x$$

$$\{2, 1\}$$

Simplify each expression.

$$9) \frac{10n}{4n^2 - 8n}$$

$$\frac{5}{2(n - 2)}; \{0, 2\}$$

$$10) \frac{x^2 - 20x + 100}{x - 10} \cdot \frac{1}{x - 1}$$

$$\frac{x - 10}{x - 1}$$

$$11) \frac{2}{b + 3} + \frac{4}{b - 5}$$

$$\frac{6b + 2}{(b - 5)(b + 3)}$$

Solve each equation. Remember to check for extraneous solutions.

$$12) \frac{3}{n^2 - 7n + 12} + \frac{4n - 8}{n^2 - 7n + 12} = \frac{5}{n - 3}$$

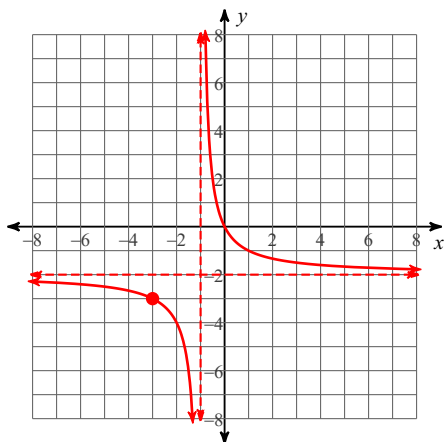
{15}

$$13) \frac{1}{k} + \frac{k - 6}{2k^2 - 6k} = \frac{1}{k - 3}$$

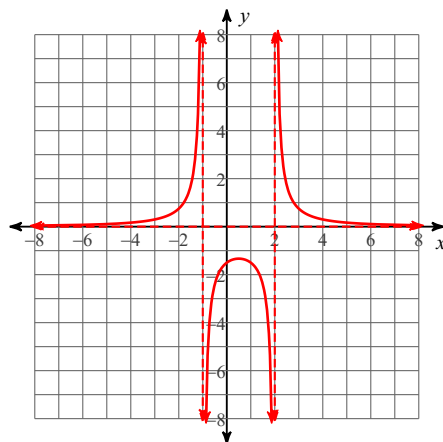
{12}

Graph each function.

$$14) f(x) = \frac{-2x^2 - 6x}{x^2 + 4x + 3}$$

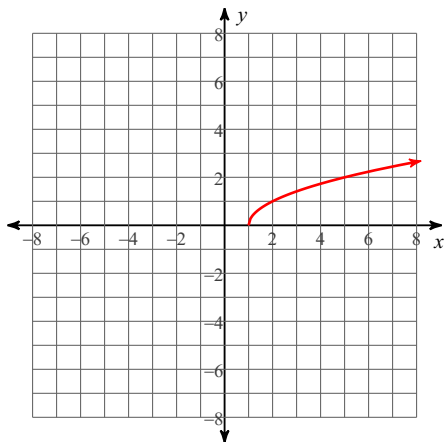


$$15) f(x) = \frac{3}{x^2 - x - 2}$$

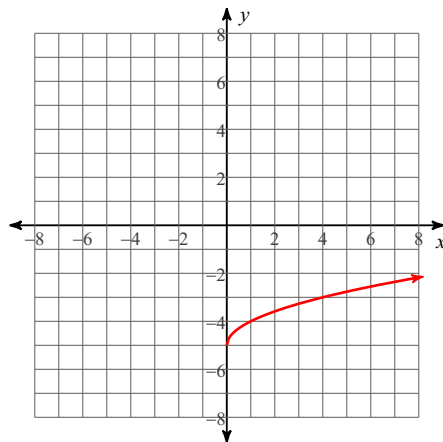


Sketch the graph of each function.

$$16) y = \sqrt{x - 1}$$



$$17) y = \sqrt{x} - 5$$



Expand each logarithm.

18) $\log_8 (u \cdot v \cdot w^6)$

$$\log_8 u + \log_8 v + 6\log_8 w$$

19) $\log_5 \frac{8^2}{3^6}$

$$2\log_5 8 - 6\log_5 3$$

Condense each expression to a single logarithm.

20) $30\log_6 x - 6\log_6 y$

$$\log_6 \frac{x^{30}}{y^6}$$

21) $12\log_7 a + 3\log_7 b$

$$\log_7 (b^3 a^{12})$$

Use a calculator to approximate each to the nearest thousandth.

22) $\log 27$

$$1.431$$

23) $\log_4 55$

$$2.891$$

Rewrite each equation in exponential form.

24) $\log_{18} 324 = 2$

$$18^2 = 324$$

25) $\log_{225} 15 = \frac{1}{2}$

$$225^{\frac{1}{2}} = 15$$

Find the inverse of each function.

26) $y = \log_3 x - 3$

$$y = 3^{x+3}$$

27) $y = -2\log_2 x$

$$y = 2^{-\frac{x}{2}}$$

28) $y = \frac{6^x}{2}$

$$y = \log_6 2x$$

29) $y = 6^x - 10$

$$y = \log_6 (x + 10)$$

Solve each equation.

30) $8 \log_5 (x + 8) = 16$

{17}

31) $7 \log_{12} (n - 4) = 14$

{148}

32) $\log_4 -4x + \log_4 7 = 1$

$\left\{ -\frac{1}{7} \right\}$

33) $\log_5 7 - \log_5 (x + 3) = 1$

$\left\{ -\frac{8}{5} \right\}$

Solve each equation. Round your answers to the nearest ten-thousandth.

34) $5 \cdot 11^{-10v} = 72$

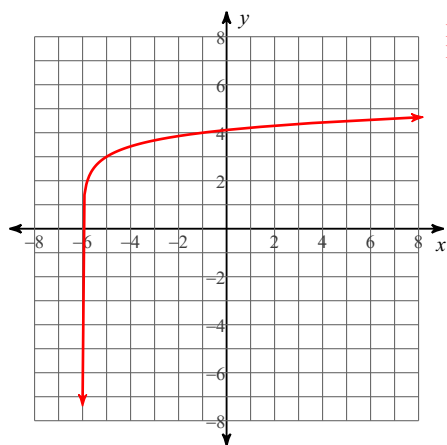
-0.1112

35) $0.3 \cdot 19^{a-4} = 11$

5.2233

Identify the domain and range of each. Then sketch the graph.

36) $y = \log_5 (x + 6) + 3$



37) $y = \log_4 (x + 2) + 1$

