


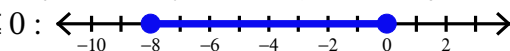
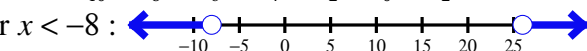
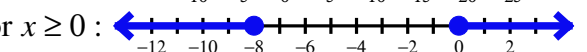
Solve each equation.

1) $5 - 6|9 - m| = -49$

- A) $\{0\}$ B) $\{0, 18\}$
 C) $\left\{-\frac{23}{7}, 5\right\}$ D) $\left\{-\frac{23}{7}\right\}$

Solve each inequality and graph its solution.

2) $7|x - 9| - 1 > 118$

- A) $x > 26$: 
- B) $-8 \leq x \leq 0$: 
- C) $x > 26$ or $x < -8$: 
- D) $x \leq -8$ or $x \geq 0$: 

Solve each system by substitution.

3) $5x - 6y = 16$
 $y = 3x + 6$

- A) Infinite number of solutions
 B) $(-6, -4)$
 C) $(-6, 4)$
 D) $(-4, -6)$

Solve each system by elimination.

4) $-3x - 7y = -13$
 $-2x + 9y = 5$

- A) $(2, 1)$ B) $(1, 2)$
 C) No solution D) $(1, -2)$

5) $3x + 4y - 2z = 11$
 $5x - 3y + z = 0$
 $-x + 3y - 2z = 6$

- A) $(5, 4, -4)$
 B) No unique solution
 C) $(1, 3, 5)$
 D) $(1, 1, -2)$

Simplify.

6) $(3 - 8i) - (-2 + i)$

- A) $11 - 25i$ B) $1 - 7i$
 C) $2 - 8i$ D) $5 - 9i$

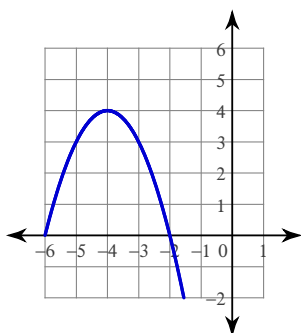
7) $(-8 - 6i)(-1 + 2i)$

- A) $20 - 10i$ B) $-4 - 22i$
 C) $4 - 22i$ D) $-16 - 12i$

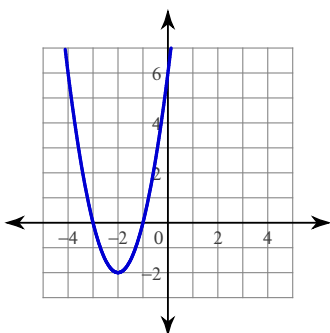
Sketch the graph of each function.

8) $y = -2x^2 - 8x - 12$

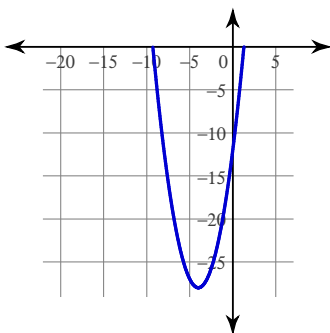
A)



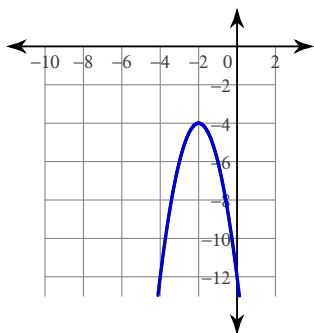
B)



C)

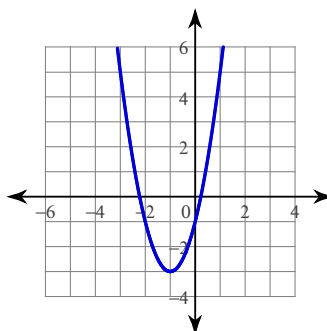


D)

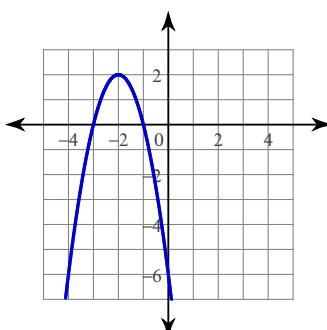


9) $y = -2(x + 2)^2 + 2$

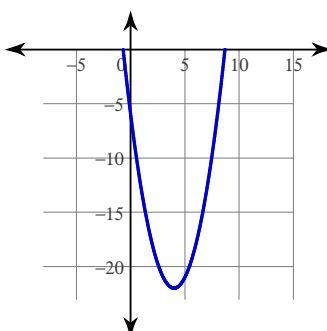
A)



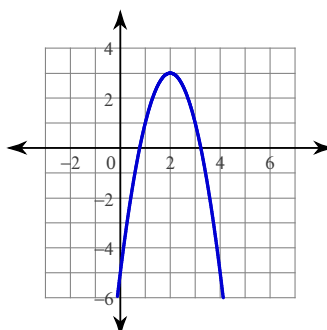
B)



C)



D)



Factor each completely.

10) $10a^2b - 36ab^2 - 16b^3$

- A) $2b(5a + 2b)(a - 4b)$
- B) $2b(5a + 8b)(a - b)$
- C) $b(a + 2b)(5a - 4b)$
- D) $2b(5a - 2b)(a + 4b)$

11) $45u^4 - 5v^4$

- A) $5(9u^2 + v^2)^2$
- B) $5(7u^2 + 6v^2)(7u^2 - 6v^2)$
- C) $5(3u^2 + v^2)(3u^2 - v^2)$
- D) $5(3u^2 - v^2)^2$

12) $4r^2 + 4r + 1$

- A) Not factorable
 B) $(-2r + 1)(2r + 1)$
 C) $(4r + 1)^2$
 D) $(2r + 1)^2$

Solve each equation by factoring.

14) $3x^2 = 30x - 63$

- A) $\{1, 2\}$ B) $\{-2, 4\}$
 C) $\{-3, 5\}$ D) $\{3, 7\}$

Solve each equation with the quadratic formula.

16) $7a^2 = -5a - 1$

- A) $\{-1, 1\}$
 B) $\left\{ \frac{-5 + i\sqrt{3}}{14}, \frac{-5 - i\sqrt{3}}{14} \right\}$
 C) $\left\{ \frac{1+i}{2}, \frac{1-i}{2} \right\}$
 D) $\{-i, i\}$

Find each term described.

18) 6th term in expansion of $(u^4 - 2v)^5$

- A) $-37v^5$ B) u^{20}
 C) $-32v^5$ D) $80u^4v^4$

Divide.

20) $(4x^3 + 2x^2 - 4x) \div (4x + 2)$

- A) $x^2 - 3 + \frac{1}{4x + 2}$
 B) $x^2 + 2$
 C) $x^2 - 1 + \frac{1}{2x + 1}$
 D) $x^2 - 4 - \frac{1}{4x + 2}$

Solve each equation by taking square roots.

13) $5a^2 + 5 = 120$

- A) $\{\sqrt{23}\}$
 B) $\{\sqrt{23}, -\sqrt{23}\}$
 C) $\{\sqrt{13}, -\sqrt{13}\}$
 D) $\{5, -5\}$

Find the value that completes the square and then rewrite as a perfect square.

15) $r^2 + 8r + \underline{\hspace{1cm}}$

- A) 169; $(r - 13)^2$
 B) 4; $(r + 4)^2$
 C) 16; $(r + 4)^2$
 D) 121; $(r + 11)^2$

Find each product.

17) $(2x + 2)(3x^2 + 7x + 5)$

- A) $8x^3 - 20x^2 - 11x - 3$
 B) $6x^3 + 12x^2 - 20x - 6$
 C) $6x^3 + 20x^2 + 24x + 10$
 D) $21x^3 + 8x^2 - 2x - 1$

Expand completely.

19) $(2x + 1)^4$

- A) $96x^4 + 120x^3 + 80x^2 + 30x + 6$
 B) $80x^4 + 80x^3 + 40x^2 + 10x + 1$
 C) $16x^4 + 32x^3 + 24x^2 + 8x + 1$
 D) $16x^4 + 8x^3 + 4x^2 + 2x + 1$

Factor each completely.

21) $64x^6 + 27y^6$

- A) $(4x^2 - 3y^2)(16x^4 + 12x^2y^2 + 9y^4)$
 B) $(4x^2 + 3y^2)(16x^4 - 12x^2y^2 + 9y^4)$
 C) $(4x^2 + 3y^2)(4x^2 - 24x^2y^2 + 3y^2)$
 D) $(4x^2 + 3y^2)^3$

22) $3u^3 - 24$

- A) $3(u + 2)(u^2 - 2u + 4)$
 B) $3(u - 2)(u + 2)$
 C) $3(u - 2)(u^2 + 2u + 4)$
 D) $3(u - 2)^3$

Evaluate each function.

23) $f(t) = t^2 + 2t$; Find $f(-8)$

- A) 63 B) 48
 C) -1 D) 35

Perform the indicated operation.

24) $g(x) = -3x^2 + 2$

$f(x) = -4x$

Find $g(x) - f(x)$

- A) $3x^2 + 4x - 2$
 B) $3x^2 - 4x - 2$
 C) $-3x^2 + 4x + 2$
 D) $-3x + 1$

25) $h(a) = a^2 + 4$

$g(a) = 3a - 1$

Find $h(a) \cdot g(a)$

- A) $3a^3 - a^2 + 12a - 4$
 B) $-12a^3 - 19a^2 - 4a$
 C) $8a^2 - 18a + 9$
 D) $8a^2 + 16a$

26) $g(x) = 3x + 2$

$h(x) = 3x - 1$

Find $g(h(x))$

- A) $9x^2 - 30x + 24$ B) $9x - 1$
 C) $-9x - 1$ D) $9x + 5$

27) $f(a) = a^2 + 4$

$g(a) = a - 1$

Find $f(g(3))$

- A) 8 B) 20
 C) 68 D) 12

28) $f(x) = -2x - 3$

$g(x) = 4x - 3$

Find $2f(x) + g(x)$

- A) -9
 B) $3x^3 - 3x^2 - 6x - 2$
 C) $6x - 9$
 D) $-6x - 9$

29) $g(n) = -2n + 4$

$h(n) = n^2 - 5n$

Find $-3g(-1) + 5h(-1)$

- A) 12 B) -122
 C) -71 D) -38

Find the inverse of each function.

30) $h(x) = -x + 4$

A) $h^{-1}(x) = \frac{-2x + 8}{7}$

B) $h^{-1}(x) = -x$

C) $h^{-1}(x) = -x + 4$

D) $h^{-1}(x) = -\frac{2}{7}x - \frac{6}{7}$

Simplify.

31) $\sqrt{6} \cdot \sqrt{2}$

- A) 12 B) $2\sqrt{3}$
 C) $3\sqrt{3}$ D) $2\sqrt{2}$

Write each expression in exponential form.

32) $(\sqrt[3]{7})^4$

- A) 6^2 B) $7^{\frac{4}{3}}$
C) 3^4 D) 7^3

Simplify.

34) $27^{-\frac{5}{3}}$

- A) $\frac{1}{512}$ B) $\frac{1}{243}$
C) 1024 D) 3

Solve each equation. Remember to check for extraneous solutions.

36) $\sqrt{3k-8} - 3 = -1$

- A) $\{-3, 2\}$ B) $\{-3, -4\}$
C) $\{4\}$ D) $\{2\}$

Simplify each expression.

37) $\frac{5r^2 - 19r - 4}{3r^2 - 10r - 8}$

- A) $\frac{5r+3}{5r^2}$ B) $\frac{5r+1}{3r+2}$
C) $\frac{5r^2}{5r+3}$ D) $\frac{2r+5}{-2r+1}$

39) $\frac{n-5}{6} \cdot \frac{4n^3+20n^2}{4n^3-20n^2}$

- A) $\frac{(n-5)(n+5)}{5n}$
B) $\frac{(n+3)(n+4)}{5n^2}$
C) $\frac{n+5}{6}$
D) $\frac{25n}{n-5}$

Write each expression in radical form.

33) $10^{\frac{5}{3}}$

- A) $(\sqrt[3]{7})^5$ B) $(\sqrt[3]{10})^5$
C) $(\sqrt[3]{10})^4$ D) $\sqrt{6}$

Simplify. Your answer should contain only positive exponents.

35) $\frac{-2x(2x^{-2})^3}{-3y^{-3}}$

- A) $\frac{2}{27x^7y^3}$ B) $\frac{y^8}{x^2}$
C) $\frac{3}{y^2x}$ D) $\frac{16y^3}{3x^5}$

38) $\frac{2a}{a^2+10a+21} \div \frac{1}{a+3}$

- A) $\frac{2a}{a+7}$ B) $\frac{a-1}{a-2}$
C) $\frac{a-1}{6a^2}$ D) $a-4$

40) $\frac{3}{10x^2-6x} - \frac{4}{2x}$

- A) $\frac{15x}{(x+5)(x-4)}$
B) $\frac{-1+x}{2x(5x-4)}$
C) $\frac{5x^2-23x-15}{(x+5)(x-4)}$
D) $\frac{15-20x}{2x(5x-3)}$

$$41) \frac{\frac{a+3}{a} - \frac{1}{2}}{\frac{4}{a+3} - \frac{9}{4}}$$

A) $\frac{4 + a^2 + 3a}{20a}$

B) $\frac{4a^2 + 9a^3}{18 + 9a^2}$

C) $\frac{146a}{9a^2 + 63a + 108}$

D) $\frac{2a^2 + 18a + 36}{-11a - 9a^2}$

Solve each equation. Remember to check for extraneous solutions.

$$42) \frac{2k^2 - 4k + 2}{k^2} - \frac{2}{k} = \frac{k+2}{k^2}$$

A) {1} B) $\left\{\frac{7}{2}\right\}$

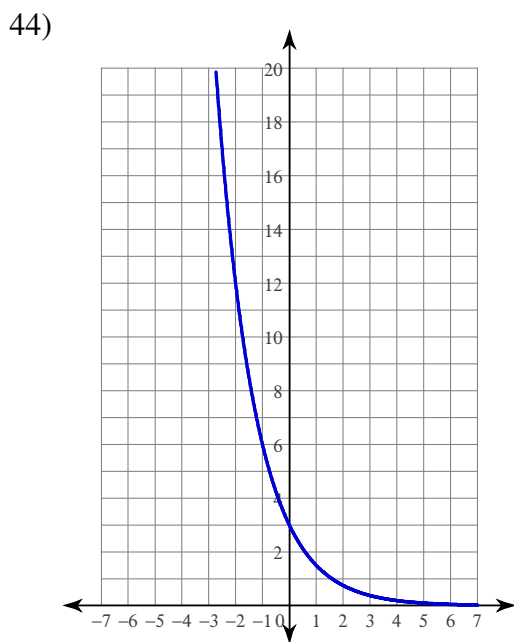
C) {0, -2} D) {0, 1}

$$43) \frac{1}{n^2 - n - 2} - \frac{1}{2n - 4} = \frac{1}{2n^2 - 2n - 4}$$

A) {-2} B) {0}

C) {-1} D) {0, 2}

Write an equation for each graph.



A) $y = 3 \cdot \left(\frac{1}{2}\right)^x$ B) $y = 5 \cdot 2^{-x}$

C) $y = \frac{1}{4} \cdot 5^x$ D) $y = 2 \cdot 3^x$

Solve each equation.

$$45) 64^{-2k} = 16^{k+1}$$

A) {0} B) $\left\{-\frac{1}{4}\right\}$

C) {2} D) {-4}

Rewrite each equation in exponential form.

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

- A) $324^2 = 18$ B) $18^{324} = 2$
 C) $18^2 = 324$ D) $2^{324} = 18$

Evaluate each expression.

48) $\log_2 16$

- A) $-\frac{1}{4}$ B) 8
 C) 4 D) $\frac{1}{4}$

Condense each expression to a single logarithm.

50) $2\ln x + 12\ln y$

- A) $\ln(y^2x^6)$ B) $\ln(z\sqrt{yx})$
 C) $\ln(y^{12}x^2)$ D) $\ln\frac{x^2}{y^{12}}$

Solve each equation.

51) $-3 \cdot 10^{p+8} + 10 = -6$

- A) $\frac{\log_8 3 - 10}{10}$
 B) $\frac{\log_6 13 - 8}{10}$
 C) $\log \frac{3}{8} - 10$
 D) $\log \frac{16}{3} - 8$

53) $\log_4(6 - 2b) = \log_4(-4b + 10)$

- A) $\left\{-\frac{11}{3}\right\}$ B) $\{-4\}$
 C) $\{2\}$ D) $\{10\}$

Rewrite each equation in logarithmic form.

47) $15^2 = 225$

- A) $\log_{225} 15 = 2$
 B) $\log_{225} 2 = 15$
 C) $\log_{15} 225 = 2$
 D) $\log_{15} 2 = 225$

Expand each logarithm.

49) $\log \frac{a^4}{b}$

- A) $4\log a - \log b$
 B) $\frac{4\log a}{3}$
 C) $4\log a + 4\log b$
 D) $\log a - 4\log b$

52) $17^{8n} + 4 = 86$

- A) $\log_8 \frac{69}{4} - 1$
 B) $\log_{86} 4 - 17$
 C) $\log_{17} \frac{2}{43} - 1$
 D) $\frac{\log_{17} 82}{8}$

54) $\log_7 9 + \log_7 x = 1$

- A) $\left\{\frac{55}{8}\right\}$ B) $\left\{\frac{7}{9}\right\}$
 C) $\left\{\frac{9}{2}\right\}$ D) $\left\{\frac{49}{9}\right\}$

Find the rule.

55) $-26, -126, -226, -326, \dots$

- A) $a_n = 74 + 100n$
 B) $a_n = 74 - 100n$
 C) $a_n = -26 + 100n$
 D) $a_n = -126 + 100n$

Find the 8th term.

57) $-4, -16, -64, -256, \dots$

- A) $a_8 = -65536$ B) $a_8 = -512$
 C) $a_8 = -\frac{1}{32}$ D) $a_8 = -\frac{5}{128}$

Evaluate the series.

58) $26 + 33 + 40 + 47 \dots, n = 16$

- A) 2512 B) 4992
 C) 1256 D) 2496

60) $5 - 3 + \frac{9}{5} - \frac{27}{25} \dots$

- A) $\frac{25}{8}$ B) 5
 C) $\frac{5}{8}$ D) No sum

Find the term named in the problem.

56) $5, 12, 19, 26, \dots$

Find a_{32}

- A) $a_{32} = -212$ B) $a_{32} = 222$
 C) $a_{32} = -274$ D) $a_{32} = -283$

59) $4 - 12 + 36 - 108 \dots, n = 6$

- A) 1 B) -515
 C) -638 D) -728

Determine if each geometric series converges or diverges.

61) $4 + 16 + 64 + 256 \dots$

- A) Converges B) Diverges

Answers to (ID: 1)

- | | | | |
|-------|-------|-------|-------|
| 1) B | 2) C | 3) D | 4) A |
| 5) D | 6) D | 7) A | 8) D |
| 9) B | 10) A | 11) C | 12) D |
| 13) B | 14) D | 15) C | 16) B |
| 17) C | 18) C | 19) C | 20) C |
| 21) B | 22) C | 23) B | 24) C |
| 25) A | 26) B | 27) A | 28) A |
| 29) A | 30) C | 31) B | 32) B |
| 33) B | 34) B | 35) D | 36) C |
| 37) B | 38) A | 39) C | 40) D |
| 41) D | 42) B | 43) B | 44) A |
| 45) B | 46) C | 47) C | 48) C |
| 49) A | 50) C | 51) D | 52) D |
| 53) C | 54) B | 55) B | 56) B |
| 57) A | 58) C | 59) D | 60) A |
| 61) B | | | |