

Use the information provided to write the standard form equation of each circle.

1) Center: $(-16, -8)$

Radius: 3

A) $(x - 16)^2 + (y - 8)^2 = 9$

B) $(x - 16)^2 + (y + 8)^2 = 1$

C) $(x - 16)^2 + (y + 8)^2 = 9$

D) $(x + 16)^2 + (y + 8)^2 = 9$

Use the information provided to write the general conic form equation of each circle.

2) Center: $(0, 16)$

Radius: $\sqrt{5}$

A) $x^2 + y^2 - 32y + 255 = 0$

B) $x^2 + y^2 + 32y + 251 = 0$

C) $x^2 + y^2 - 32y + 252 = 0$

D) $x^2 + y^2 - 32y + 251 = 0$

3) Center: $(8, 2)$

Circumference: 18π

A) $x^2 + y^2 - 6x + 16y - 6488 = 0$

B) $4x^2 + y^2 - 15x - 4y - 12 = 0$

C) $x^2 + y^2 - 16x + 4y - 13 = 0$

D) $x^2 + y^2 - 16x - 4y - 13 = 0$

Use the information provided to write the standard form equation of each circle.

4) Center: $(-1, 7)$

Point on Circle: $(-3, 4)$

A) $(x + 1)^2 + (y - 7)^2 = 169$

B) $(x + 1)^2 + (y - 7)^2 = 13$

C) $x^2 + (y + 6)^2 = 13$

D) $(x - 1)^2 + (y - 7)^2 = 13$

Factor each completely.

5) $4x^2 - 8x$

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

6) $-m^2 - 3m - 2$

- A) $-(m + 2)(m + 1)$
B) $(m + 2)(m + 1)$
C) Not factorable
D) $-(m + 2)(m - 1)$

7) $n^4 - 4n^3 + 3n^2$

- A) $n^2(n - 1)(n + 3)$
B) $n^2(n + 1)(n - 3)$
C) $(n + 3)(n + 1)$
D) $n^2(n - 1)(n - 3)$

8) $-m^2 + 2m + 63$

- A) $-(m + 3)(m - 21)$
B) $-(m - 7)(m - 9)$
C) $-(m + 7)(m - 9)$
D) $-(m + 9)(m - 7)$

9) $n^2 + 9n + 14$

- A) $(n - 2)(n - 7)$
B) $(n + 2)(n + 7)$
C) $(n + 14)(n + 1)$
D) $n(n - 5)$

10) $a^2 + 5a - 36$

- A) $(a + 9)(a - 4)$
B) Not factorable
C) $(a + 4)(a - 9)$
D) $(a + 12)(a - 3)$

11) $6a^3 - 22a^2 + 16a$

- A) $2a(3a + 8)(a - 1)$
B) $2a(3a - 8)(a - 1)$
C) $6a(a - 8)(a + 1)$
D) $2a(3a + 4)(a + 2)$

12) $10b^3 + 52b^2 - 126b$

- A) $10b(b - 9)(b - 7)$
B) $b^2(3b - 10)$
C) Not factorable
D) $2b(5b - 9)(b + 7)$

13) $-5b^2 + b$

- A) $(7b + 8)(b - 9)$
B) $-b(5b + 1)$
C) $-5b(b - 1)$
D) $-b(5b - 1)$

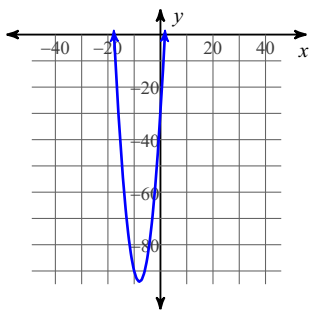
14) $7x^4 + 33x^3 - 54x^2$

- A) $x^2(7x - 9)(x + 6)$
B) $x^2(7x + 18)(x - 3)$
C) $7x^2(x - 9)(x - 6)$
D) $x^2(7x + 6)(x - 9)$

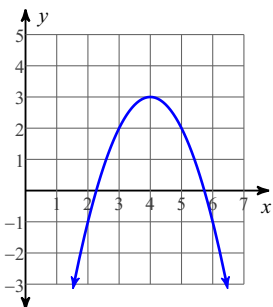
Sketch the graph of each function.

15) $y = -2x^2 - 16x - 30$

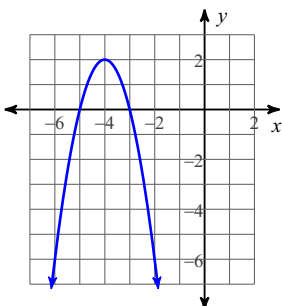
A)



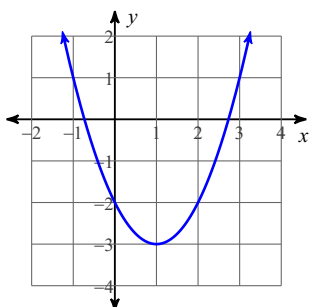
B)



C)

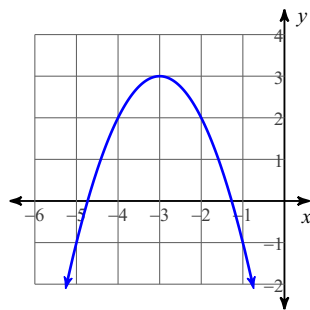


D)

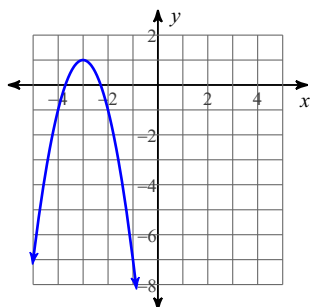


16) $y = x^2 + 2x - 3$

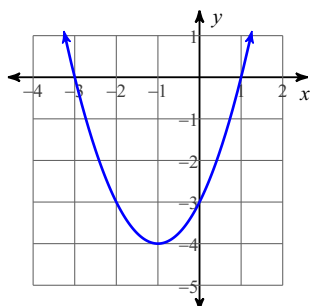
A)



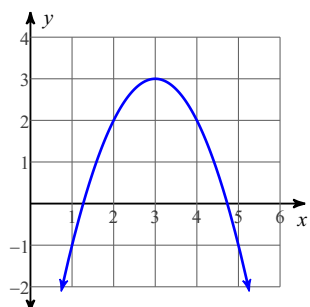
B)



C)

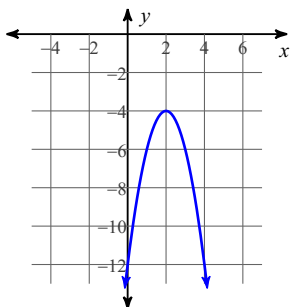


D)

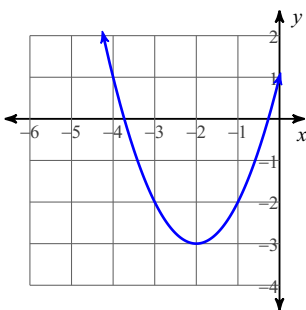


17) $y = (x + 2)^2 - 3$

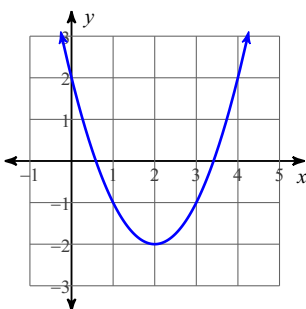
A)



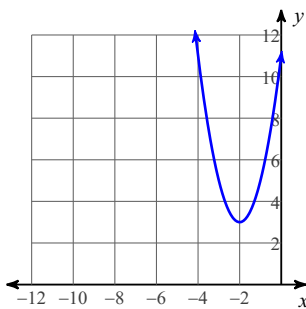
B)



C)

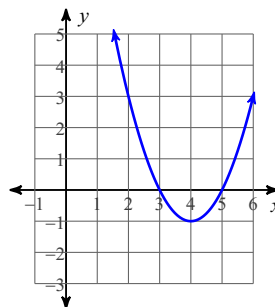


D)

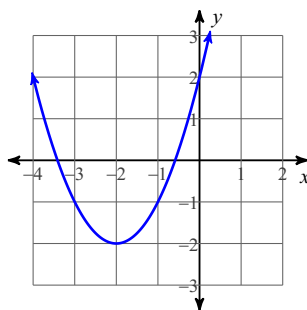


18) $y = 3(x - 4)^2 + 4$

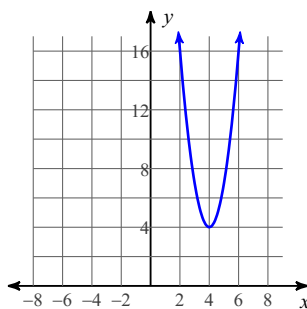
A)



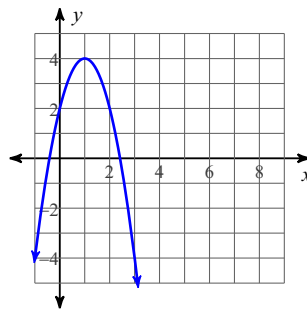
B)



C)



D)



Simplify each expression.

19) $(m + 3m^4 - 4m^2) - (3m^2 - 6m^4 + 3m)$

- A) $2m^4 - 12m^2 - 10m$
- B) $9m^4 - 7m^2 - 2m$
- C) $2m^4 - 7m^2 - 2m$
- D) $2m^4 - 12m^2 - 2m$

20) $(6x^2 - 3x^4 + 6x) - (2x^2 - 5x + 8 - 2x^4) - (4x - 6x^4)$

- A) $5x^4 + 4x^2 + 7x - 8$
- B) $5x^4 + 4x^2 + 7x + 7x^3$
- C) $5x^4 + 4x^2 + 7x - 5 + 7x^3$
- D) $5x^4 + 4x^2 + 7x - 8 + 7x^3$

Describe the end behavior of each function.

21) $f(x) = -x^2 + 2x + 1$

- A) $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$
- B) $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$
- C) $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$
- D) $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$

22) $f(x) = -x^2 + 6x - 4$

- A) $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$
- B) $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$
- C) $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$
- D) $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$
 $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$

Find each product.

23) $(6p + 8)(8p + 1)$

- A) $48p^2 + 70p + 8$
- B) $15p^2 + 7p - 30$
- C) $48p^2 + 8$
- D) $15p^2 - 30$

24) $(4b + 6)(b^2 + 6b + 4)$

- A) $24b^3 + 10b^2 - 49b + 21$
- B) $6b^3 - b^2 - 36b - 32$
- C) $4b^3 + 30b^2 + 52b + 24$
- D) $49b^3 + 7b^2 + 9b + 12$

25) $(8b^2 - 2b - 3)(3b^2 - 6b + 5)$

- A) $24b^4 - 42b^3 + 19b^2 + 28b - 15$
- B) $24b^4 + 12b^2 - 15$
- C) $24b^4 + 42b^3 + 19b^2 - 28b - 15$
- D) $24b^4 - 54b^3 + 43b^2 + 8b - 15$

Solve each equation by completing the square.

26) $v^2 + 16v - 13 = 4$

- A) $\{-8 + \sqrt{47}, -8 - \sqrt{47}\}$
- B) $\{1, -17\}$
- C) $\{-1, -9\}$
- D) $\{5, -7\}$

27) $v^2 - 14v + 43 = 10$

- A) $\{1, -19\}$
- B) $\{-7, -13\}$
- C) $\{11, 3\}$
- D) $\{5, -7\}$

Solve each equation by factoring.

28) $n^2 = -8n$

- A) $\{-3, -2\}$
- B) $\{6, -6\}$
- C) $\{-8, 0\}$
- D) $\{6, 4\}$

29) $v^2 + 15 = 8v$

- A) $\{-2, 3\}$
- B) $\{-3, -2\}$
- C) $\{3, 5\}$
- D) $\{1, 0\}$

30) $2x^2 + 21 = -17x$

- A) $\left\{-\frac{2}{7}, -5\right\}$ B) $\left\{-\frac{3}{2}, -7\right\}$
 C) $\left\{\frac{7}{5}, -2\right\}$ D) $\left\{-\frac{4}{5}, 0\right\}$

31) $5n^2 - 3n = 14$

- A) $\left\{-\frac{2}{7}, -2\right\}$ B) $\left\{-\frac{1}{3}, -6\right\}$
 C) $\left\{-\frac{6}{5}, 2\right\}$ D) $\left\{-\frac{7}{5}, 2\right\}$

Solve each equation by taking square roots.

32) $1 - 6r^2 = -599$

- A) $\{10, -10\}$ B) $\{100, -100\}$
 C) $\left\{\frac{\sqrt{897}}{3}\right\}$ D) $\{7, -7\}$

33) $49n^2 - 1 = 24$

- A) $\left\{\frac{5}{7}, -\frac{5}{7}\right\}$ B) $\{\sqrt{53}, -\sqrt{53}\}$
 C) $\{50, -50\}$ D) $\{53, -53\}$

Solve each equation with the quadratic formula.

34) $v^2 = 60 - 4v$

- A) $\{-2 + \sqrt{19}, -2 - \sqrt{19}\}$
 B) $\{6, -10\}$
 C) $\left\{\frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}\right\}$
 D) $\left\{\frac{i\sqrt{7}}{7}, -\frac{i\sqrt{7}}{7}\right\}$

35) $4x^2 + 3x = 27$

- A) $\left\{\frac{5 + i\sqrt{95}}{10}, \frac{5 - i\sqrt{95}}{10}\right\}$
 B) $\left\{3, -\frac{9}{4}\right\}$
 C) $\left\{\frac{-5 + i\sqrt{95}}{10}, \frac{-5 - i\sqrt{95}}{10}\right\}$
 D) $\left\{\frac{9}{4}, -3\right\}$

36) $5a^2 = -3a + 22$

A) $\left\{ \frac{3 + \sqrt{449}}{10}, \frac{3 - \sqrt{449}}{10} \right\}$

B) $\left\{ \frac{-3 + \sqrt{449}}{10}, \frac{-3 - \sqrt{449}}{10} \right\}$

C) $\left\{ \frac{-3 + i\sqrt{431}}{10}, \frac{-3 - i\sqrt{431}}{10} \right\}$

D) $\left\{ \frac{1 + \sqrt{681}}{20}, \frac{1 - \sqrt{681}}{20} \right\}$

Simplify.

37) $3\sqrt{45} - \sqrt{5} + 3\sqrt{2}$

A) $7\sqrt{5}$

B) $16\sqrt{5}$

C) $7\sqrt{5} + 3\sqrt{2}$

D) $8\sqrt{5} + 3\sqrt{2}$

38) $2\sqrt{45} - 2\sqrt{12} - \sqrt{12}$

A) $6\sqrt{5} - 6\sqrt{3}$

B) $12\sqrt{5} - 4\sqrt{3}$

C) $12\sqrt{5} - 2\sqrt{3}$

D) $6\sqrt{5} - 4\sqrt{3}$

39) $\sqrt{5}(5\sqrt{3} + \sqrt{2})$

A) $20 + 2\sqrt{3}$

B) $10\sqrt{5} + 12\sqrt{3}$

C) $5\sqrt{15} + \sqrt{10}$

D) 13

40) $(-4 + \sqrt{2})(3 + \sqrt{2})$

A) $3\sqrt{3} + 3$

B) $-10 - \sqrt{2}$

C) -10

D) $2 + 8\sqrt{2} + \sqrt{6} + 8\sqrt{3}$

Answers to (ID: 1)

1) D
5) D
9) B
13) D
17) B
21) B
25) D
29) C
33) A
37) D

2) D
6) A
10) A
14) A
18) C
22) B
26) B
30) B
34) B
38) A

3) D
7) D
11) B
15) C
19) B
23) A
27) C
31) D
35) D
39) C

4) B
8) C
12) D
16) C
20) A
24) C
28) C
32) A
36) B
40) B