1. Simplify $\dfrac{4x^2+8x}{x^3+8}$.

   a) $\dfrac{4x+8}{x^2+8}$

   b) $\dfrac{4x}{x^2-2x+4}$

   c) $\dfrac{4x}{(x+2)^2}$

   d) $\dfrac{x^2+2x}{x^3+2}$

2. Perform the indicated operation $\dfrac{7xy}{x^2-4x+4} \div \dfrac{14y}{x^2-4}$.

   a) $\dfrac{x(x+2)}{2(x-2)}$

   b) $\dfrac{x}{2(x^2-4)(x^2-4x+4)}$

   c) $-\dfrac{x}{2}$

   d) $\dfrac{x+2}{x-2}$

3. Simplify $\dfrac{3}{x^2+x} + \dfrac{1}{x}$.

   a) $\dfrac{4}{x(x+1)}$

   b) $\dfrac{4}{x(x+2)}$

   c) $\dfrac{x+4}{x(x+1)}$

   d) $\dfrac{3x+4}{x(x+1)}$

4. Simplify $\dfrac{\frac{3}{8}+\frac{3}{4}}{\frac{5}{8}-\frac{7}{12}}$.

   a) 18

   b) 27

   c) 1

   d) $\dfrac{27}{29}$

5. Solve $\dfrac{7}{x+4} = \dfrac{3}{x-8}$.

   a) $x = \dfrac{22}{5}$

   b) $x = 17$

   c) $x = -13$

   d) $x = 11$

6. Solve $\dfrac{a}{a+2} + \dfrac{3}{a+4} = \dfrac{14}{a^2+6a+8}$.

   a) $a = -8, a = 1$

   b) $a = 1$

   c) $a = 1, a = -\dfrac{7}{2}$

   d) $a = 0$

7. Simplify $(2^{-2}4^{-1})^{-1}$.

   a) $\dfrac{1}{16}$

   b) $\dfrac{1}{32}$

   c) 8

   d) 16

8. Write $\dfrac{1}{3}\sqrt{90}$ in simplest radical form.

   a) $\dfrac{1}{9}\sqrt{10}$

   b) $\dfrac{1}{3}\sqrt{10}$

   c) $\sqrt{10}$

   d) $\sqrt{30}$

9. Write $\sqrt{49x^5y^4}$ in simplest radical form.

   a) $7x^2y^2$

   b) $7x^2y^2\sqrt{x}$

   c) $7y^2\sqrt{x^5}$

   d) $7\sqrt{x^5y^4}$

10. Simplify $-2\sqrt{25x} - 4\sqrt{36x} + 7\sqrt{64x}$.

    a) $\sqrt{x}$

    b) $22\sqrt{x}$

    c) $-10\sqrt{5x} - 24\sqrt{6x} + 56\sqrt{8x}$

    d) $-26\sqrt{x}$

11. Rationalize the denominator and simplify $\dfrac{\sqrt{2x}}{\sqrt{2x}+\sqrt{5y}}$.

a) $\dfrac{2x+\sqrt{10xy}}{4x^2-25y^2}$

b) $\dfrac{2x-\sqrt{10xy}}{4x^2+25y^2}$

c) $\dfrac{2x-\sqrt{10xy}}{2x-5y}$

d) $\dfrac{\sqrt{10xy}}{5y}$

12. Evaluate $(-\dfrac{8}{27})^{-\frac{1}{3}}$.

a) $-\dfrac{3}{2}$

b) $-\dfrac{2}{3}$

c) $\dfrac{2}{3}i$

d) $-\dfrac{3}{2}i$

13. How many solutions does the equation $\sqrt{-x}-6=x$ have?

a) 0

b) 1 only

c) 2

d) There are an infinite number of solutions.

14. Write $(-5+3i)^2$ in standard form.

a) $16-15i$

b) $16-30i$

c) $-34-30i$

d) $34-15i$

15. Solve $(x+3)(2x+1)=-3$.

a) $\{-6,-2\}$

b) $\{-3,-\dfrac{1}{2}\}$

c) $\{-3,\dfrac{1}{2}\}$

d) $\{-2,-\dfrac{3}{2}\}$

16. Find the product of the roots of the quadratic equation $2x^2-4x+7=0$.

a) $\dfrac{7}{2}$

b) $-\dfrac{3}{2}$

c) -10

d) 2

17. Solve $\dfrac{10}{x+6}+\dfrac{3}{x}=1$.

a) $\{\dfrac{3\pm 3\sqrt{7}}{2}\}$

b) $\{\dfrac{-17}{3}\}$

c) $\{9\}$

d) $\{-2,9\}$

18. Solve the inequality $4x^2-x-14\leq 0$.

a) $[-2,\dfrac{7}{4}]$

b) $(-\infty,2]$

c) $[-\dfrac{7}{4},2]$

d) $[2,\infty)$

19. Solve the inequality $\dfrac{2x-1}{x+2}\geq -1$.

a) $(-2,-\dfrac{1}{3}]$

b) $(-\infty,-2)\cup[-\dfrac{1}{3},\infty)$

c) $(-2,\infty)$

d) $(-\infty,-2]\cup[\dfrac{1}{3},\infty)$

20. The graph of $y=(x+2)^2+1$ is the basic parabola moved

a) 2 units to the left and 1 unit down.

b) 2 units to the right and 1 unit down.

c) 2 units to the left and 1 unit up.

d) 2 units to the right and 1 unit up.

21. Find the vertex of the parabola $y = 3x^2 + 6x + 1$.

a) $(1, -2)$

b) $(1, 2)$

c) $(-1, -2)$

d) $(-1, 2)$

22. Find the center and the length of the radius of the circle $x^2 + y^2 - 16x + 6y + 71 = 0$.

a) center $(8, -3)$; radius $\sqrt{2}$

b) center $(8, -3)$; radius 2

c) center $(-8, 3)$; radius $\sqrt{2}$

d) center $(-8, 3)$; radius 2

23. Write the equation of the circle with center $(6, -8)$ and radius 10.

a) $x^2 + y^2 + 12x - 16y = 0$

b) $x^2 + y^2 - 12x + 16y = 0$

c) $x^2 + y^2 + 12x - 16y + 90 = 0$

d) $x^2 + y^2 - 12x + 16y + 90 = 0$

24. Find the length of the minor axis and the length of the major axis of the ellipse $16x^2 + 9y^2 = 144$.

a) minor = 6; major = 8

b) minor = 3; major = 4

c) minor = 9; major = 16

d) minor = 4; major = 9

25. Find the center of the ellipse $4x^2 + y^2 + 4y - 12 = 0$.

a) $(2, -1)$

b) $(2, 1)$

c) $(0, 2)$

d) $(0, -2)$

26. Find the intercepts of the hyperbola $y^2 - 9x^2 = 36$.

a) $(6, 0), (-6, 0)$

b) $(0, 6), (0, -6)$

c) $(2, 0), (-2, 0)$

d) $(0, 2), (0, -2)$

27. Find the equations of the asymptotes of the hyperbola $4x^2 - 16x - y^2 + 4 = 0$.

a) $y = 2x, y = -2x$

b) $y = 2x - 2, y = -2x + 2$

c) $y = 2x - 4, y = -2x + 4$

d) $y = x - 2, y = -x + 2$

28. Find the value of x in the solution of the system $\begin{pmatrix} x - 3y = 25 \\ -3x + 2y = -26 \end{pmatrix}$.

a) 3

b) 4

c) 5

d) 6

29. Find the value of x in the solution of the system $\begin{pmatrix} \frac{1}{3}x - \frac{1}{2}y = -3 \\ \frac{2}{3}x + \frac{1}{4}y = 4 \end{pmatrix}$.

a) 3

b) -3

c) 6

d) -6

30. Jane bought 2 packages of cookies and 1 bag of potato chips for a total of \$9.25. Later she bought 3 more packages of cookies and 2 additional bags of potato chips for \$15.50. Find the price of a package of cookies.

a) \$2.5

b) \$3

c) \$3.25

d) \$3.5

FINAL EXAM- SAMPLE C

1. B

2. A

3. C

4. B

5. B

6. A

7. D

8. C

9. B

10. B

11. C

12. A

13. B

14. B

15. D

16. A

17. D

18. C

19. B

20. C

21. C

22. A

23. B

24. A

25. D

26. B

27. C

28. B

29. A

30. B