

Make sure to show all work for all problems. Circle final answers.

1. Simplify the following radical. (9.1)

$$\sqrt{200}$$

$$\sqrt{2} \sqrt{100}$$

$$\boxed{10\sqrt{2}}$$

2. Rationalize the denominator. (9.1)

$$\sqrt{\frac{25c^7d^3}{64}}$$

$$\frac{\sqrt{25} \sqrt{c^7} \sqrt{d^3}}{\sqrt{64}} \quad \frac{5c^3 \sqrt{c} d \sqrt{d}}{8}$$

$$\boxed{\frac{5c^3 d \sqrt{cd}}{8}}$$

3. Solve by graphing. (9.2)

$$x^2 + 36 = 12x$$

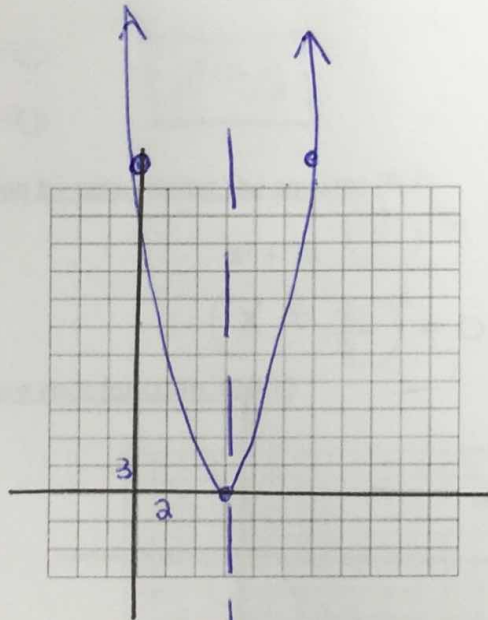
$$\underline{-12x \quad -12x}$$

$$x^2 - 12x + 36$$

$$(x-6)^2$$

$$(6, 0)$$

$$(0, 36)$$



4. Solve using the quadratic formula. (9.5)

$$x^2 - 3x - 10 = 0$$

A B C

$$x = \frac{3 \pm \sqrt{(-3)^2 - 4(1)(-10)}}{2(1)}$$

$$= \frac{3 \pm \sqrt{9+40}}{2} = \frac{3 \pm \sqrt{49}}{2} = \frac{3 \pm 7}{2} = \frac{10}{2} = \boxed{5}$$

$$= \frac{-4}{2} = \boxed{-2}$$

5. Solve the system. (9.6)

$$y = 3x^2 + 2x - 4 \text{ and } y + 4x = 5$$

$$\begin{array}{r} 3x^2 + 2x - 4 = -4x + 5 \\ +4x \quad 5 \quad +4x \quad -5 \\ \hline 3x^2 + 6x - 9 \\ 3(x^2 + 2x - 3) \end{array}$$

$$3(x+3)(x-1) = 0$$

$$\boxed{x = -3}$$

$$\boxed{x = 1}$$

6. Find the domain of the function. (10.1)

$$y = \sqrt{x-10}$$

$$x \geq 10$$

7. Solve the equation. (9.3)

$$\sqrt{x+35} = 12$$

$$\begin{array}{r} x+35 = 144 \\ -35 \quad -35 \\ \hline \end{array}$$

$$\frac{12\sqrt{x+35}}{12} = \frac{144}{12}$$

$$x = 109$$

8. Solve the equation. (9.3)

$$x^2 = 6x - 9$$

$$x^2 - 6x + 9 = 0$$

$$(x-3)^2 = 0$$

$$x = \sqrt{6x-9}$$

$$x = 3$$

9. Solve the following equation by completing the square: (9.4)

$$x^2 + 7x + \left(\frac{7}{2}\right)^2$$

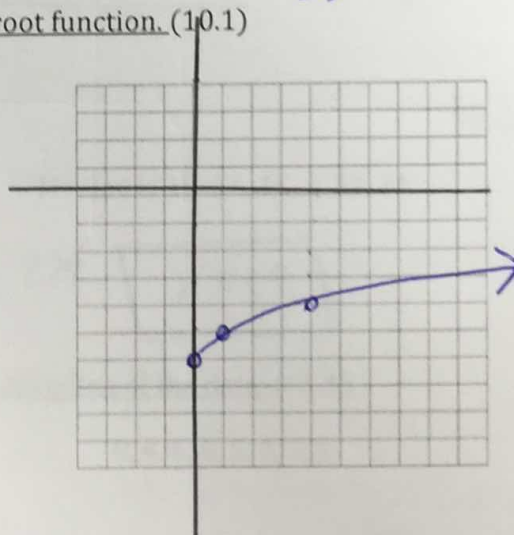
$$\left(x + \frac{7}{2}\right)^2 = 0$$

$$x = -\frac{7}{2}$$

10. Graph the following square root function. (10.1)

$$y = \sqrt{x} - 6$$

X	Y
0	-6
1	-5
4	-4



11. Solve the radical expression. (10.3)

$$\begin{array}{r} 10 - \sqrt{x} = -5 \\ -10 \quad -10 \\ \hline \end{array}$$

$$-\sqrt{x} = -15$$

$$\sqrt{x} = 15$$

$$x = 225$$

12. Identify the extraneous solution. (10.3)

$$\begin{array}{r} 13 + \sqrt{5x} = 3 \\ -13 \quad -13 \\ \hline \sqrt{5x} = -10 \end{array}$$

$$\frac{5x}{5} = \frac{100}{5}$$

$$x = 20$$

↑
extraneous solution

14. Find the inverse of the relation. (10.4)

Input	3	2	0	-2	-3
Output	10	8	0	8	10

input	10	8	0	8	10
output	3	2	0	-2	-3

15. Answer the following inverse question. (10.4)

Suppose f and f^{-1} are inverse functions and $f(-8) = -5$. What is the value of $f^{-1}(-5)$?

-8

16. Find the value of x. (11.1)

Mean is 9, 8, 5, 8, 9, 10, 7, x

$$9 = \frac{9 + 8 + 5 + 8 + 9 + 10 + 7 + x}{7}$$

$$9 = \frac{47 + x}{7}$$

$$x = 16$$

$$63 = 47 + x$$

17. Find the value of x. (11.1)

Median is 19: 14, 16, x, 22, 24

$$14, 16, x, 22, 24 \quad x = 19$$

18. Find the mean and standard deviation of the data. (11.1)

8, 4, 6, 8, 5, 7, 5, 5

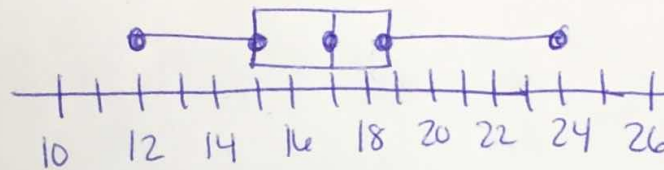
$$\begin{array}{l} \text{mean} = 6 \\ \text{std. dev} = 1.5 \end{array}$$

$$\begin{array}{l} S_x = 1.5 \\ \sigma_x = 1.4 \end{array}$$

19. Draw a box-and-whisker plot from the following set of data: (11.2)

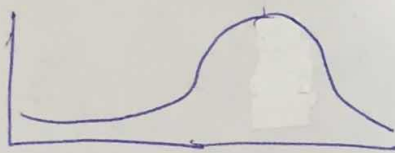
15, 18, 12, 18, 20, 24, 16, 13, 15, 16, 18, 19

min 12
 Q_1 15
 med 17
 Q_3 18.5
 max 24



20. Draw an example of the following types of distributions: (11.3)

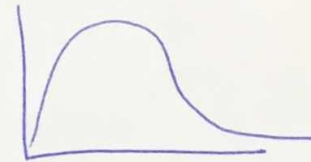
Skewed Left



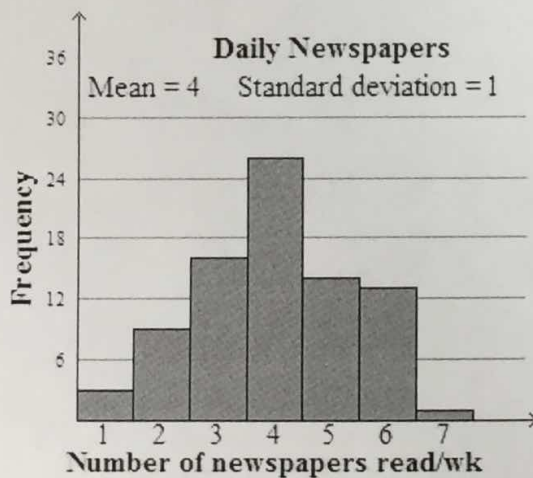
Symmetric



Skewed Right



21. Estimate the percent of data within 2 standard deviations of the mean. (11.1)



- a. about 68%
- b. about 85%

- c. about 53%
- d. about 95%

22. Use the following two-way table to answer the following questions. (11.4)

		Ride School Bus	
		Yes	No
Class	Junior	38	32
	Senior	21	44

- a) How many juniors responded? 70
- b) How many total students ride the bus? 59
- c) How many total students were surveyed? 135