1. **If f(x) = -x2 - x - 4, find f(-2), f(0), and f(4).**

2. **If f(x) =** $\sqrt{x-4}- 3x$**, find f(4), f(8), and f(13).**

**If a and h are real numbers, find**

**a) f(a) (b) f(-a) (c) -f(a) (d) f(a+h) (e) f(a) + f(h) (f)** $\frac{f\left(a+h\right)-f(a)}{h} if h \ne 0$

3. f(x) = 5x - 2 4. f(x) = -x2 + 4 5. f(x) = x2 - x + 3

**If a is a positive real number, find (a) g**$(\frac{1}{a})$ **(b)** $\frac{1}{g(a)}$ **(c) g(**$\sqrt{a}$ **) (d)** $\sqrt{g(a)}$

6. g(x) = 4x2

7. g(x) = 2x - 5

**Find the domain of f.**

8. f(x) = $\sqrt{2x+7}$ 9. f(x) = $\sqrt{9-x^{2}}$ 10. f(x) = $\frac{x+1}{x^{3}-4x}$

11. f(x) = $\sqrt{x^{2}-25}$ 12. $\frac{\sqrt{2x-3}}{x^{2}-5x+4}$ 13. $\frac{x-4}{\sqrt{x-2}}$

**Sketch the graph of f. Find the domain D and range R of f.**

14. f(x) = 3x - 2 15. f(x) = 4 - x2  16. f(x) = $\sqrt{x+4}$



17. f(x) = -2 18. f(x) = $\sqrt{4-x}$ 19. f(x) = $-\sqrt{36-x^{2}}$

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**If a linear function f satisfies the given conditions, find f(x).**

20. f(-3) = 1 and f(3) = 2

**Determine whether the set W of ordered pairs is a function.**

21. W = {(x,y): 2y = x2 + 5} 22. W = {(x,y): x2 + y2 = 4} 23. W = {(x,y): y = 3}

24. W = {(x,y): xy = 0} 25. W = {(x,y): |y| = |x|}

26. From a rectangular piece of cardboard having dimensions 20 inches x 30 inches, an open box is to be made by cutting out an identical square of area x2 from each corner and turning up the sides. Express the volume V of the box as a function of x.

27. **The table lists the practical stopping distances D (in feet) for cars at speeds S (in miles per hour) on level surfaces, as used by the American Association of State Highway and Transportation Officials.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| S | 20 | 30 | 40 | 50 | 60 | 70 |
| D | 33 | 86 | 167 | 278 | 414 | 593 |

(a) Plot the data. (b) Determine whether stopping distance (c) Discuss the practical is a linear function of speed. implications of these data for safely driving a car.