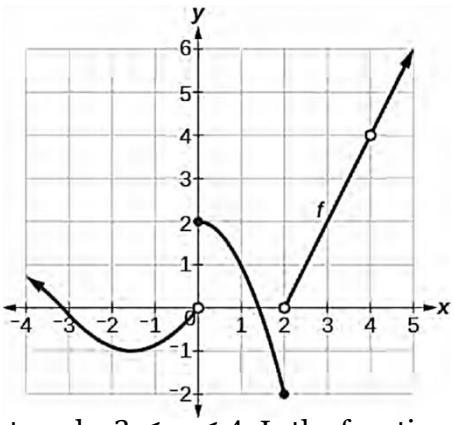
Name: _____

1.REV.1 – End of Chapter Review

Past due on: _____ Period: _____

Problems 1 – 8: Use the graph of $f(x)$.



1. Evaluate $f(3)$.
2. Evaluate $f(2)$.
3. Evaluate $f(4)$.
4. Evaluate $f(0)$.
5. Solve $f(x) = -2$.
6. Solve $f(x) = 2$.
7. For what interval(s) is the function increasing.
8. For what interval(s) is the function decreasing.
9. Find the average rate of change of the function $f(x) = -x^3 - 5$ on the interval $-2 \le x \le 4$. Is the function increasing or decreasing on this interval?

10. A car was originally valued at \$12,800; eight years later, it is now worth \$8200. Determine the rate of change (assuming it is constant) and explain what it means in terms of the contextual situation.

11. In the table shown, the per capita spending on prescription drugs is a function of the number of years since 1990. Find the average rate of change of the *entire* interval and use it to estimate $P(18)$.

Years Since 1990 t	Per Capita Spending on Prescription Drugs (dollars) P
0	158
5	224
8	311
9	368
10	423

12. A vehicle owner wants to calculate the total cost of his 2007 Jeep Compass with a MSRP of \$18,366. His monthly loan payment is \$317.54 for 5 years after he puts down a \$2000 down payment.
    a. Write a linear function formula for the total amount he has paid, T, toward the cost of the car (including the down payment), as a function of the number of months, m.
    b. After he has made all of the payments, how much has he paid in interest?

13. In 1980, the age-adjusted death rate due to heart disease was 412.1 deaths per 100,000 people. Between 1980 and 2004, the death rate decreased at a nearly constant rate. In 2004, the death rate was 232.1 death per 100,000 people.
    a. Model the death rate due to heart disease, D, as a linear function of years since 1980, t.
    b. Evaluate $D(40)$ and explain its meaning in terms of the context of the problem.

14. A theater manager graphed weekly profits as a function of the number of patrons and found that the relationship was linear. One week the profit was \$11,328 when 1324 patrons attended. Another week 1529 patrons produced a profit of \$13,275.50

    a. Find a formula for the weekly profit, P, as a function of the number of patrons, n.

    b. Solve $P(n) = 17{,}759.50$ and interpret the result in terms of the situation.

Problems 15 – 19: Consider the linear functions given.

$$A(x) = 4x - 3$$

$$C(x) = -6 + \frac{1}{4}x$$

$$F(x) = 5 - 4x$$

$$G(x) = 9 - 2x$$

$$J(x) = 2x + 1$$

$$P(x) = 7x - 2$$

15. Which function(s) has the greatest rate of change?
16. Which function(s) has the greatest vertical intercept?
17. Which functions represent parallel lines?
18. Which functions represent perpendicular lines?
19. Which function(s) is a decreasing function?

20. Consider the line $2x - 4y + 7 = 0$.

    a. What is the y-intercept of the given line?

    b. Another line has a slope of -2; is this line parallel or perpendicular to the given line?

    c. Find the equation of a line parallel to the given line passing through $(4, -6)$.

    d. Find the equation of a line perpendicular to the given line passing through $(-3, 5)$.

21. Refer to the table below:

t	200	230	320	400
$G(t)$	70	68.5	64	60

Is $G(t)$ a linear function? Explain your reasoning.

If $G(t)$ is a linear function, write a function formula in slope-intercept form and use it to evaluate $G(325)$. If $G(t)$ is <u>not</u> a linear function, calculate the average rate of change over the entire interval and use it to predict $G(325)$.