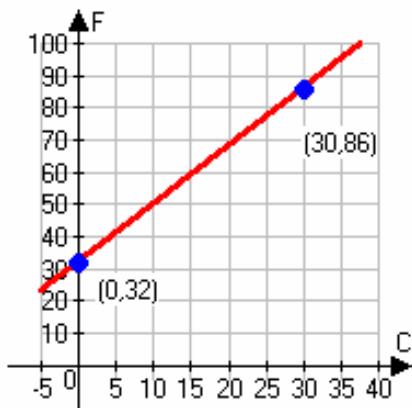


Name: \_\_\_\_\_

## Prerequisite Skills

1. The following graph shows the relationship between Fahrenheit temperature and Celsius temperature.



- Determine the slope of the line.
- Determine the equation of the line in slope-intercept form, where  $F$  is a function of  $C$ .
- Describe how  $F$  changes when  $C$  changes by 1 unit.
- Interpret  $F(0)$ .
- Interpret  $F(C) = 0$ .
- Determine the equation of the relationship, where  $C$  is a function of  $F$ .
- Sketch the graph of  $y = C(F)$ .
- Interpret  $C(0)$ .
- Interpret  $C(F) = 0$ .
- Describe how  $C$  changes when  $F$  changes by 1 unit.

2. Write a piecewise-defined function for the cost of mailing a letter weighing  $x$  ounces if the first ounce costs 37¢ and each additional ounce costs 23¢ more. Graph the function and find the cost of mailing a 3.5-ounce letter.

For each of the following functions find the exact values when possible and approximate values to the nearest thousandth of:

- Domain and range
- Intercepts, both  $x$  and  $y$ -intercept
- Asymptotes, if any
- Max/min values and when they occur
- A sample table of values for the function
- Graph the function
- Answer any additional question.

3.  $f(x) = -2x^2 + 12x - 8$

4.  $f(x) = \frac{1}{4}x^4 - \frac{1}{2}x^3 - \frac{13}{4}x^2 + \frac{7}{2}x + 6$

Write the polynomial in factored form.

5.  $f(x) = \left| \frac{1}{4}x^4 - \frac{1}{2}x^3 - \frac{13}{4}x^2 + \frac{7}{2}x + 6 \right|$

6.  $f(x) = \frac{x^2 - x - 6}{x^2 + 3x - 4}$

7.  $A(t) = 2e^{t-1} - 3$

8.  $y(s) = \frac{1}{2}\ln(s+1) - 4$

9.  $h(y) = 2\cos y - 1$

10.  $g(x) = 2\cos^2 x - 3\cos x - 1$

11.  $f(\theta) = \tan \theta + 1 - \sqrt{3} + \sqrt{3}\tan \theta$

12.  $k(w) = 4\cos 2w - 8\sin w \cos w$