Exam 1 review problems

MAT 123, Summer 2016

Equations, formulas, and inequalities

Solve the equation.

1. $3m - 7 = -13 + m$
2. $5y - 4(2y - 10) = 25$
3. Solve $Ax + By = C$ for y.
4. Solve $y = mx + b$ for m.

For each inequality, show the answer on a number line and write it using interval notation.

5. $3x + 1 \geq 5x + 9$
6. $2x - 5 < x + 7$

Lines

7. Find the slope and y-intercept of the line $-2x - y = 7$.
8. Make a graph of the line $y = -\frac{3}{4}x + 3$.
9. Find the slope of the line containing the points $(2, -11)$ and $(5, 6)$.
10. Find the equation of the line with slope $-\frac{2}{3}$ and y-intercept -4.
11. Find the equation of the line passing through the points $(4, 1)$ and $(-2, -1)$.

Functions

Look at the problem on Quiz 2 that used the vertical line test to analyze a graph.

Define the function $f(x) = x^2 - x - 3$. Evaluate the following expressions.

12. $f(0)$
13. $f(-3)$
14. $f(-x)$
15. $f(a + 1)$

Define the piecewise function

$$g(x) = \begin{cases} -x & \text{if } x \leq -4 \\ \frac{1}{2}x + 1 & \text{if } x > -4 \end{cases}$$

16. Find $g(0)$.

17. Find $g(-5)$.

18. Graph the function $g(x)$

Start with a basic function and use transformations to sketch the graph.

16. $f(x) = \sqrt{x} - 1$

17. $g(x) = -|x - 3|$

Quadratic functions

Put the equation in vertex form by completing the square.

16. $y = x^2 + 6x + 16$

17. $y = \frac{1}{2}x + x + 5$

Also be ready for an application problem involving price, cost, revenue, and profit.