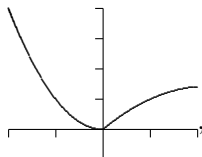


Review 2A

Math 110

The learning center is open for help.

1. If $f(x) = x^2 + 1$, find (a) $f(0)$, (b) $f(1)$, (c) $f(3)$, (d) $f(c)$, (e) $f(c+1)$.
2. If $f(x) = x^2$, simplify $f(x+h) - f(x)$.
3. Starting with a basic function, show each shift and reflection used in sketching the graph of $h(x) = -\sqrt{x+1}$.

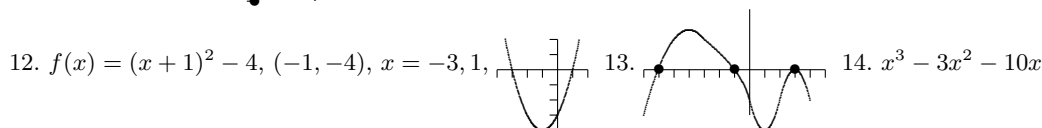
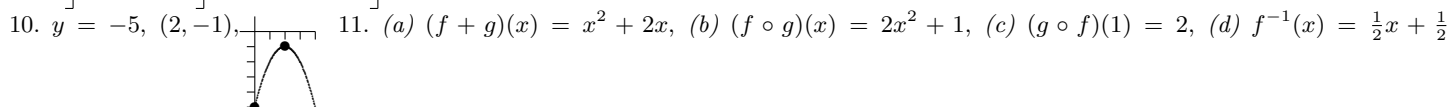
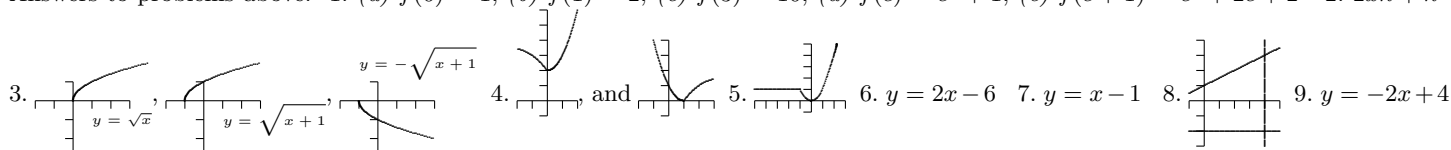


4. If $y = f(x)$ has the graph , sketch the graphs of $y = f(-x) + 2$ and $y = f(x - 1)$

5. Graph the function $f(x) = \begin{cases} 1 & \text{if } x \leq -1 \\ x^2 & \text{if } x > -1 \end{cases}$.

6. Find the equation of the line with slope 2 that passes through $(1, -4)$.
7. Find the equation of the line that passes through $(4, 3)$ and $(2, 1)$.
8. Graph the three lines $y = \frac{1}{2}x + 1$, $x = 4$ and $y = -2$.
9. Find the equation of the line parallel to $2x + y = 8$ through $(1, 2)$.
10. State the vertex and y -intercept of $y = -(x - 2)^2 - 1$ and sketch the graph.
11. Given the functions $f(x) = 2x - 1$ and $g(x) = x^2 + 1$, evaluate (a) $(f + g)(x)$, (b) $(f \circ g)(x)$, (c) $(g \circ f)(1)$, (d) $f^{-1}(x)$.
12. Write $f(x) = x^2 + 2x - 3$ in the form $f(x) = a(x - h)^2 + k$, state the vertex and x -intercepts and sketch the graph.
13. Sketch the graph of $y = -2(x + 1)(x + 6)(x - 3)^2$ showing its behavior at each x -intercept.
14. Find and expand a polynomial whose roots are $x = -2$, $x = 0$ and $x = 5$.

Answers to problems above: 1. (a) $f(0) = 1$, (b) $f(1) = 2$, (c) $f(3) = 10$, (d) $f(c) = c^2 + 1$, (e) $f(c+1) = c^2 + 2c + 2$ 2. $2xh + h^2$

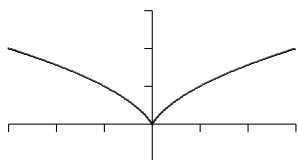


Review 2B

Math 110

The learning center is open for help.

1. If $f(x) = \sqrt{x+1}$, find (a) $f(0)$, (b) $f(1)$, (c) $f(3)$, (d) $f(c)$, (e) $f(c+1)$.
2. If $f(x) = 3x - 2$, simplify $\frac{f(x+2) - f(x)}{2}$.
3. Starting with a basic function, show each shift and reflection used in sketching the graph of $h(x) = |x - 1| + 2$.

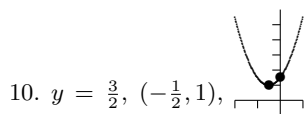
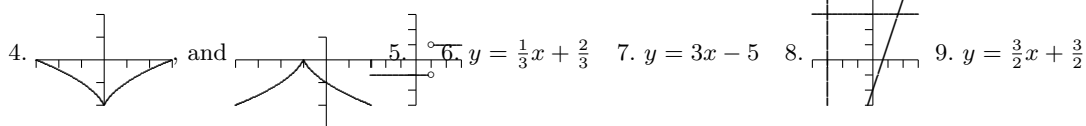
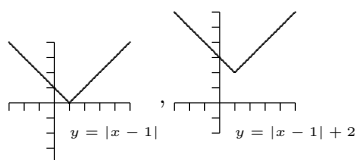


4. If $y = f(x)$ has the graph , sketch the graphs of $y = f(x) - 2$ and $y = -f(x + 1)$

5. Graph the function $f(x) = \begin{cases} -1 & \text{if } x < 1 \\ 1 & \text{if } x > 1 \end{cases}$.

6. Find the equation of the line with slope $\frac{1}{3}$ that passes through $(-2, 0)$.
7. Find the equation of the line that passes through $(2, 1)$ and $(3, 4)$.
8. Graph the three lines $y = 3x - 2$, $x = -3$ and $y = 3$.
9. Find the equation of the line perpendicular to $2x + 3y = 6$ through $(1, 3)$.
10. State the vertex and y -intercept of $y = 2(x + \frac{1}{2})^2 + 1$ and sketch the graph.
11. Given the functions $f(x) = x^3 - 1$ and $g(x) = 1/x + 1$, evaluate (a) $(fg)(x)$, (b) $(g \circ f)(x)$, (c) $(f \circ g)(1)$, (d) $g^{-1}(x)$.
12. Write $f(x) = -x^2 - 2x + 8$ in the form $f(x) = a(x - h)^2 + k$, state the vertex and x -intercepts and sketch the graph.
13. Sketch the graph of $y = x^3(x - 1)^2$ showing its behavior at each x -intercept.
14. Find and expand a polynomial whose roots are $x = \pm 3$ and $x = 1$.

Answers to problems above: 1. (a) $f(0) = 1$, (b) $f(1) = \sqrt{2}$, (c) $f(3) = 2$, (d) $f(c) = \sqrt{c+1}$, (e) $f(c+1) = \sqrt{c+2}$ 2. 3 3.



10. $y = \frac{3}{2}$, $(-\frac{1}{2}, 1)$, 11. (a) $(fg)(x) = x^3 + x^2 - 1 - \frac{1}{x}$, (b) $(g \circ f)(x) = \frac{1}{x^3-1} + 1$, (c) $(f \circ g)(1) = 7$, (d) $g^{-1}(x) = \frac{1}{x-1}$

