

MATH F156X Practice for Assessment 3

Assessment Specific Information:

- The Assessment 3 is 10 problems and is worth 40 points. Each numbered problem will earn you a score of 1-4 based on your set up of the function, your use of course methods to solve and prove your solution and your statement of the solution.
- You will have 1 hour to complete Assessment 3.
- This test is closed book and closed notes.
- Calculators are not allowed on the assessment.

Graph the following by making the appropriate transformations of a basic curve. State the basic function, the transformations and find all *intercepts* that exist.

a) $f(x) = -2\sqrt{x+2} + 1$ b) $f(x) = \sqrt{-x} - 2$ c) $g(x) = -\left|x + \frac{2}{3}\right| + \frac{4}{3}$

d) $g(x) = |-(x + \pi)| - 3$ e) $h(x) = -(x - 4)^2 + \frac{1}{2}$ f) $h(x) = -(x + 2)^3 - 1$

Given the functions: $k = \left\{(-1, -3), (2, 0), \left(\frac{3}{2}, -1\right)\right\}$, $f(x) = \frac{2x}{x-4}$, $g(x) = \sqrt{x+1}$ and

$h(x) = 4$; find the following:

a) $f(0)$ b) $g(-3)$ c) $k(-1)$ d) $h(2)$ e) domain of k

f) domain of f g) domain of g h) a if $f(a) = 2$ i) b if $g(b) = 6$

Given $f(x) = \frac{2}{x}$, $g(x) = -x^2 + 3$, $h(x) = \frac{3+x^2}{x^2-4}$ and $k(x) = \sqrt{x+1}$; find the following:

a) $\frac{f(y+1)-f(y)}{y}$ b) Domain of h c) $\frac{g(y+x)-g(x)}{y}$ d) $\frac{k(8)-k(x)}{8-x}$

e) $(h \circ k)(x)$ f) $(k \circ h)(x)$ g) $(g \circ k)(x)$

For each of the functions below, find f^{-1} , the domain of f^{-1} , and the range of f^{-1} .

a) $f(x) = \frac{2x+1}{x-1}$ b) $f(x) = 3\sqrt{2x+1}$ c) $f(x) = (x-1)^2 + 6$ for $x \geq 1$

Find the vertex, intercepts, range, axis of symmetry and sketch the graph for each of the following:

a) $f(x) = 6x^2 - 19x - 7$ b) $y = \left(x + \frac{1}{2}\right)^2 - \frac{5}{4}$ c) $y = 2x^2 + 10x + 11$

d) $f(x) = 3x^2 + 4x + 3$ e) $g(x) = x^2 + 4x + 3$ f) $h(x) = 2x^2 - 4x + 3$