MATH 1022 REVIEW PROBLEMS FOR TEST 1 Fall 2023

Text: **James Stewart**, *Precalculus Mathematics for Calculus*, 7th Edition, Cengage learning.

Below are the answers to the even problems. Answers to odd problems are in the book.

2.1:

46) $\frac{1}{a+1}, \frac{1}{a+h+1}, \frac{1}{(a+1)(a+h+1)}$

58) $(-\infty, -3) \cup (-3, 2) \cup (2, \infty)$

64) $(-\infty, -2] \cup [2, \infty)$

2.2:

54) Not a function.

2.3:

7) EXTRA $[-3, -1.4) \cup (1.2, 4]$

8a) $3, 2, -2, 1, 0$ b) Domain: $[-4, 4]$, Range $[-2, 3]$ c) -4 d) $(-1, -1.8)$

2.6

14a) The graph of $y = 1 - f(-x)$ can be obtained by reflecting the graph of $y = f(x)$ about the x-axis, then reflecting about the y-axis, then shifting upward one unit.

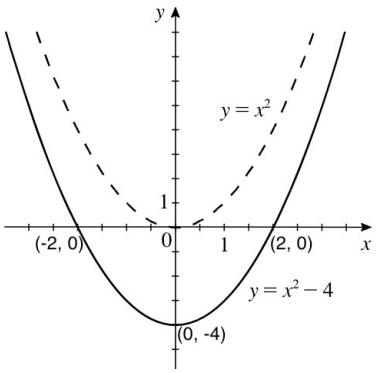
22a) The graph of $g(x) = -\sqrt{x} + 1$ is obtained by reflecting the graph $f(x) = \sqrt{x}$ about the x-axis, then shifting the resulting graph upward by one unit.

22b) The graph of $g(x) = \sqrt{-x} + 1$ is obtained by reflecting the graph $f(x) = \sqrt{x}$ about the y-axis, then shifting the resulting graph upward by one unit.

26) Graph IV.

28) Graph III.

30)



86) Even

90) Odd

3.6:
23) EXTRA $x = -8$, $x = 4$

32) Vertical asymptotes: $x = -1$, $x = 1$; Horizontal asymptote: $y = 0$; EXTRA $x = \frac{7}{3}$, $x = 3$

2.7:
58) $(f \circ g)(x) = 2 + \frac{4}{x}$, Domain $= (-\infty, -2) \cup (-2, 0) \cup (0, \infty)$;
$(g \circ f)(x) = \frac{1}{1+x}$, Domain$= (-\infty, -1) \cup (-1, 0) \cup (0, \infty)$.
$(f \circ f)(x) = x$, and the domain is $(-\infty, 0) \cup (0, \infty)$.
$(g \circ g)(x) = \frac{x}{3x+4}$, Domain $= (-\infty, -2) \cup (-2, -\frac{4}{3}) \cup (-\frac{4}{3}, \infty)$.

2.8:
40) $f(g(x)) = x$ and $g(f(x)) = x$. The functions f and g are inverses of each other by the Inverse Function Property.

49) $D_f = R_{f^{-1}} = (-\infty, \infty)$, $D_{f^{-1}} = R_f = (-\infty, \infty)$

53) $D_f = R_{f^{-1}} = (-\infty, -2) \cup (-2, \infty)$ and $D_{f^{-1}} = R_f = (-\infty, 0) \cup (0, \infty)$

55) $D_f = R_{f^{-1}} = (-\infty, -4) \cup (-4, \infty)$ and $D_{f^{-1}} = R_f = (-\infty, 1) \cup (1, \infty)$

61) $D_f = R_{f^{-1}} = [0, \infty)$ and $D_{f^{-1}} = R_f = (-\infty, 4]$

67) $D_f = R_{f^{-1}} = \left[-\frac{5}{8}, \infty\right)$ and $D_{f^{-1}} = R_f = [0, \infty)$

68) $D_f = R_{f^{-1}} = [-3, \infty)$ and $D_{f^{-1}} = R_f = [2, \infty)$

Chapter 2 Review:
84 a) $(f \circ g)(x) = x$ b) $(g \circ f)(x) = |x|$ c) 2 d) 26