

Math 150 Final Exam Review Answer Key

1. (a) $(2, 5), (-2, 5), (\sqrt{5}, 4), (-\sqrt{5}, 4)$
 (b) $(\sqrt{13}, -12), (-\sqrt{13}, -12)$
2. (a) $(-\infty, -2] \cup [-\frac{1}{4}, \infty)$
 (b) $x = -4$; ($x = -15$ is extraneous.)
3. (a) $[-1, -\frac{1}{2}] \cup [\frac{1}{3}, 1]$
 (b) $(-\infty, -7) \cup (-7, \frac{8}{3})$
4. -4
5. (a) $(-\frac{2}{3}, -\frac{7}{3})$
 (b) $\frac{-2 \pm \sqrt{7}}{3}; (\frac{-2 \pm \sqrt{7}}{3}, 0)$
6. $\frac{5}{8 - 3x}$
7. $f^{-1}(x) = \frac{-x - 2}{x - 1}$
8. Shift right 3, vertically shrink by $\frac{1}{5}$, reflect across the x -axis, shift up 6.
9. Hole at $x = \frac{5}{3}$, Vertical Asymptotes: $x = 2, x = -4$; Horizontal Asymptote: $y = 0$; x -int: $(-\frac{5}{3}, 0)$;
 y -int: $(0, -\frac{5}{8})$
10. (a) $\frac{2}{3}, 2, -2$
 (b) $Q(x) = -3x - 4, R(x) = 13x + 4$
11. $-14 + 31i$
12. (a) $x = \frac{\log(\frac{8}{3})}{\log 5} + 2$
 (b) $x = 5$; ($x = -\frac{2}{3}$ is extraneous.)
13. $\log\left(\frac{1}{32p^{7/3}(p^3 + 27)^{2/3}}\right) = -\log\left(32p^{7/3}(p^3 + 27)^{2/3}\right)$
14. (a) $c = \frac{5\sqrt{2}}{2} = \frac{5}{\sqrt{2}}$
 (b) $a = 7$
15. (a) $-\sqrt{10} - \frac{\sqrt{13}}{3}$
 (b) $-\frac{12}{13}$
 (c) $\frac{4}{5} + \frac{7}{\sqrt{130}}$
16. $\frac{5\sqrt{5} + 8}{3\sqrt{41}}$
17. $x = \frac{\pi}{24} + \frac{k\pi}{3}, \frac{7\pi}{24} + \frac{k\pi}{3}, \frac{16\pi}{3} + 8k\pi, \frac{20\pi}{3} + 8k\pi$

18. Resulting Force: $\langle 5\sqrt{3}, 2 \rangle$; Magnitude: $\sqrt{79}$; Direction: 13.0039°
19. (a) -5
(b) 135°
20. (a) Hyperbola; Center: $(3, -5)$
(b) Ellipse; Center: $(0, 7)$