

Math 150 Final Exam Review Answer Key

1. (a) $x^2 = -12y$
(b) Directrix: $x = 3$; Focal Diameter: 12
2. (a) $\frac{x^2}{36} + \frac{y^2}{27} = 1$
(b) Foci: $(\pm 3, 0)$; Length of Major Axis: 12; Length of Minor Axis: $2\sqrt{27}$
3. (a) $x = -4$; ($x = -15$ is extraneous.)
(b) $(-\infty, -2] \cup [-\frac{1}{4}, \infty)$
4. (a) $(-\infty, -6] \cup [2, 3) \cup (3, \infty)$
(b) $(-\infty, -7) \cup (-7, \frac{8}{3})$
5. -4
6. (a) $(-\frac{2}{3}, -\frac{7}{3})$
(b) $\frac{-2 \pm \sqrt{7}}{3}$
7. $\frac{2x - 2}{8 - 3x}$
8. $f^{-1}(x) = \frac{-x}{x - 1}$
9. $-1, -\frac{3}{2} \pm \frac{\sqrt{11}}{2}i$
10. Vertical Asymptotes: $x = -\frac{1}{2}, x = 3$; Horizontal Asymptote: $y = \frac{9}{2}$
11. $-26 - 39i$
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) $c = \frac{5\sqrt{2}}{2}$
(b) $a = 7$
15. (a) $-\sqrt{10}$
(b) $-\frac{12}{13}$
(c) $\frac{7}{\sqrt{130}} = \frac{7\sqrt{130}}{130}$

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: $\sqrt{79}$

19. (a) -5

(b) 135°