

Name Key Instructor _____ Section _____

Questions 20 and 21 are multiple choice questions worth 5 points each.

Circle your answer as usual.20. Find the solutions to the equation $2\sin^2\theta + 1 = 3\sin\theta$ on the interval $[0, 2\pi)$.

a. $\frac{\pi}{6}, \frac{\pi}{2}$

b. $\frac{\pi}{6}, 0$

c. $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{\pi}{2}$

d. $\frac{\pi}{3}, 0$

e. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{\pi}{2}$

$$2\sin^2\theta - 3\sin\theta + 1 = 0$$

$$(2\sin\theta - 1)(\sin\theta - 1) = 0$$

$$2\sin\theta - 1 = 0 \quad \text{OR} \quad \sin\theta - 1 = 0$$

$$\sin\theta = \frac{1}{2} \quad \text{OR} \quad \sin\theta = 1$$

$$\theta = \frac{\pi}{6}, \frac{5\pi}{6} \quad \text{OR} \quad \theta = \frac{\pi}{2}$$

21. Determine: $\sin^{-1}\left(\cos\left(\frac{2\pi}{3}\right)\right)$.

a. $\frac{2\pi}{3}$

b. $\frac{\pi}{6}$

c. $\frac{11\pi}{6}$

d. $\frac{3\pi}{2}$

e. $-\frac{\pi}{6}$

$$\sin^{-1}\left(\cos\frac{2\pi}{3}\right)$$

$$= \sin^{-1}\left(-\frac{1}{2}\right)$$

$$= -\frac{\pi}{6}$$

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22. (45 pts) Fill in the blanks for each function.
 Put "none" for any characteristic that does not exist. Use interval notation for domain and range.

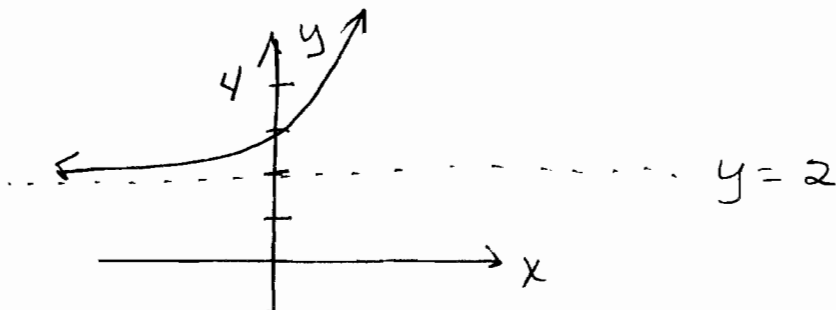
a. $k(x) = e^x + 2$

Domain $(-\infty, \infty)$

Range $(2, \infty)$

y-intercept $(0, 3)$

Asymptote(s) $y = 2$



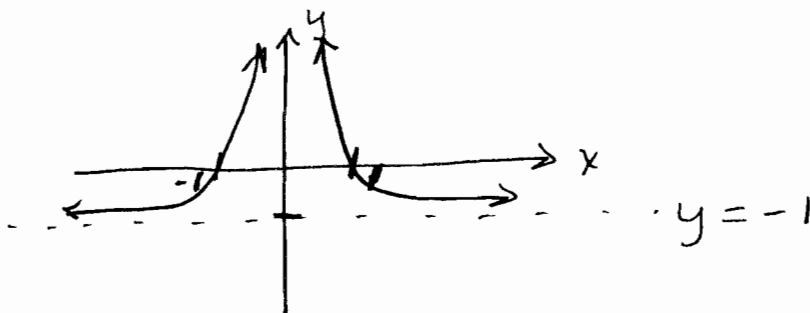
b. $r(x) = \frac{1}{x^2} - 1$

Domain $(-\infty, 0) \cup (0, \infty)$

Range $(-1, \infty)$

y-intercept None

Asymptote(s) $y = -1$



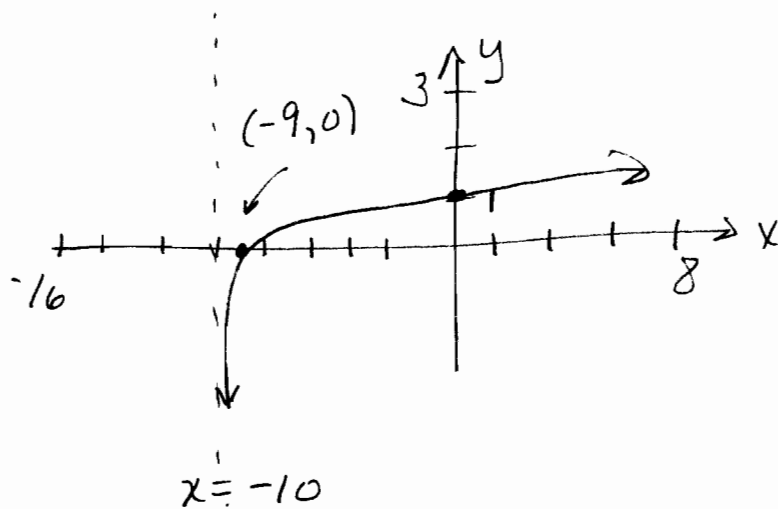
c. $s(x) = \log(x + 10)$

Domain $(-10, \infty)$

Range $(-\infty, \infty)$

y-intercept $(0, 1)$

Asymptote(s) $x = -10$



d. $t(x) = 4 \sin\left(x + \frac{\pi}{2}\right)$

Range $[-4, 4]$

Amplitude 4

Phase shift $-\frac{\pi}{2}$

