MAT170 Precalculus Exam 02 - Review (Solutions)

1.

a. $\log_b(1000) = 3$

b. $\log_7(201) = y$

c. $\ln(z) = 9$

2.

a. $5^y = 125$

b. $b^5 = 32$

c. $e^{41} = x$

3.

a. $(0, \infty)$

b. $(-\infty, 2)$

c. $(-2, \infty)$

4.

a. $\frac{1}{2}\log(100) + \frac{1}{2}\log(x) = 1 + \frac{1}{2}\log(x)$

b. $\log_6(36) - \frac{1}{2}\log_6(x+1) = 2 - \frac{1}{2}\log_6(x+1)$

c. $\ln(e^{15}) + \frac{1}{5}\ln(x-1) = 15 + \frac{1}{5}\ln(x-1)$

5.

a. $\ln\left(\frac{(x+6)^4}{x^3}\right)$

b. $\log_4\left(\sqrt{xy}\right)$

c. $\log\left(\frac{x^3z^5}{y^4}\right)$

6.

a. $x \approx 1.09$

b. $x = 4$ ($x = -9$ is not in the domain)

c. $x = \ln(3) \approx 1.10$ ($e^x = -1$ does not have a real solution)

7.

a. $A(t) = 20\,000\left(1 + \frac{0.051}{12}\right)^{12t}$

b. $A(t) = 20\,000e^{0.051t}$

c. $\$33,269.85$

d. $t \approx 31.56$ years

8.

a. $-\frac{11\pi}{6}$ rad

b. $\frac{\pi}{5}$ rad

c. $\frac{3\pi}{4}$ rad.

9.

a. $-180\,000°$

b. $343.77°$

c. $157.5°$

10.

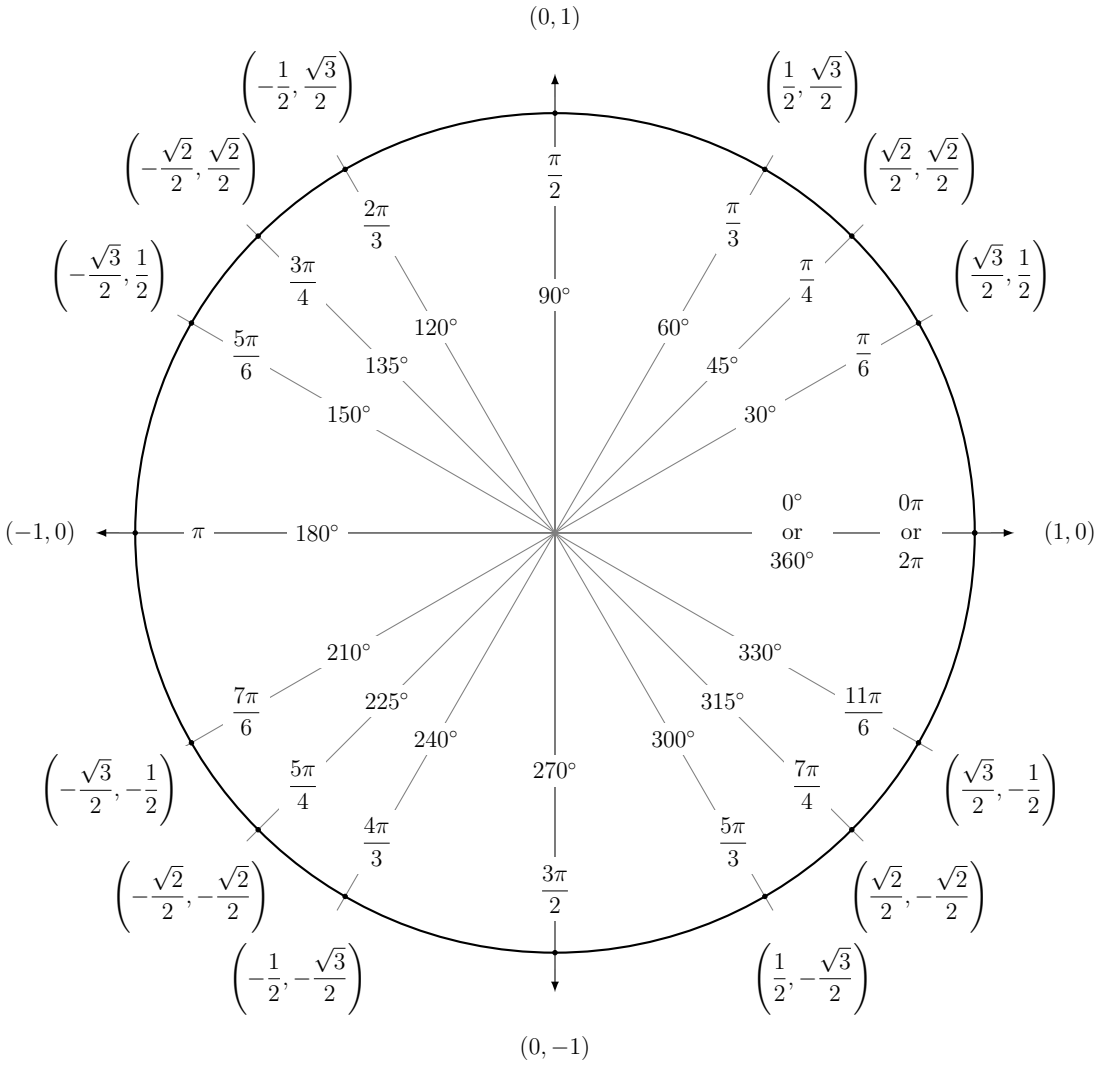
a. $\sin(\theta) = -\frac{4}{5}$

b. $\tan(\theta) = \frac{4}{3}$

c. $\sec(\theta) = -\frac{5}{3}$

d. $\csc(\theta) = -\frac{5}{4}$

11.



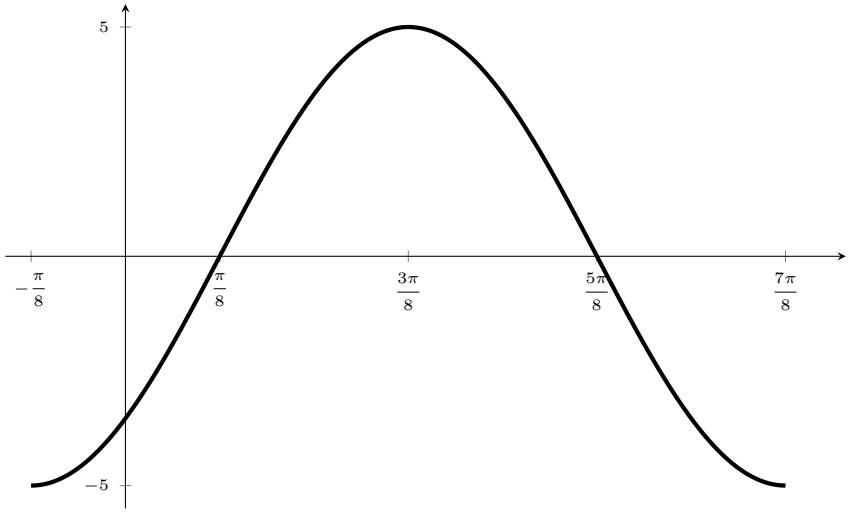
12. Let $f(\theta) = -5\cos\left(2\theta + \frac{\pi}{4}\right)$.

a. 5

b. π

c. $-\frac{\pi}{8}$

d.



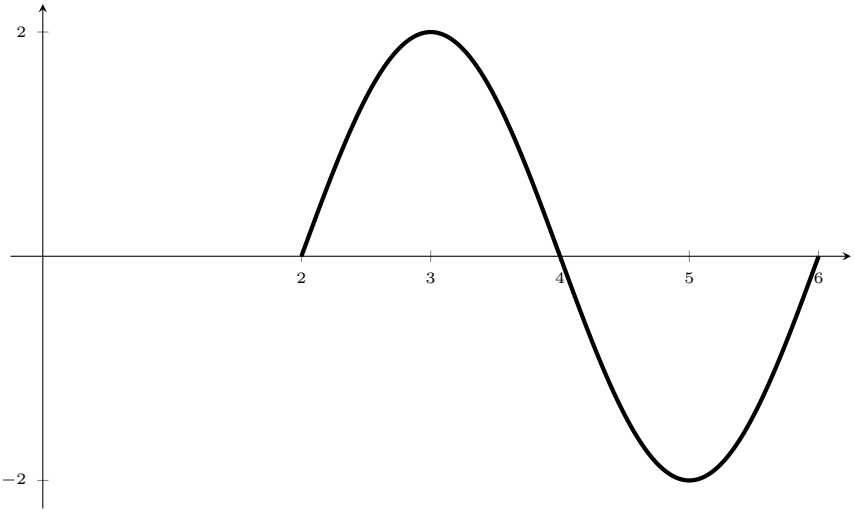
13. Let $g(\theta) = 2\sin\left(\frac{\pi}{2}\theta - \pi\right)$.

a. 2

b. 4

c. 2

d.



14. Find the exact value of each.

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

b. $\frac{5\pi}{6}$

c. $\frac{3}{\sqrt{13}}$

15. $a = 2.16$, $b = 6.66$, $\theta = 72^\circ$