Already in book?

**Calculus ABC Test I—Version 3127** **Name:** key

**Lecture section:** _____ **Student Number:** _____

*PUT ANSWERS IN BOXES. NO BOOKS/NOTES/CALCULATORS. DO YOUR OWN WORK. Simplify answers where possible. Include units where needed. All angles are in radians.* $\log = \log_{10}$.

**1.** Simplify by combining using a common denominator:

$$\frac{y}{(y+1)^2} + \frac{2}{y+1}$$

$y+2y+2$

$\frac{3y+2}{(y+1)^2}$

**2.** Simplify by combining using a common denominator:

$$\frac{t}{t-4} - \frac{3}{t+6}$$

$\frac{t^2+3t+12}{(t-4)(t+6)}$

**3.** Solve for $x$:

$$x^2 = 5$$

$x = \pm\sqrt{5}$

**4.** Solve for $x$:

$$\sqrt{2x+2} - 6 = 0$$

$x = 17$

**5.** Solve for $x$:

$$\frac{4}{x} \leq x$$

$[-2,0) \cup [2,\infty)$

**6.** Find the equation of the line with $x$-intercept -3 and $y$-intercept -1 in *slope-intercept* form.

$y = -\frac{1}{3}x - 1$.

**7.** Find all roots of: $2y^2 + 7y + 3 = 0$

$y = -\frac{1}{2}, -3$

**8.** Find the value of:

$$\cos\left(\frac{4\pi}{3}\right)$$

$-\frac{1}{2}$

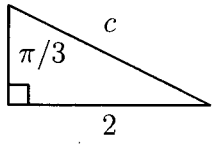
**9.** Find the value of:

$$\tan\left(\frac{4\pi}{3}\right)$$

$+\sqrt{3}$

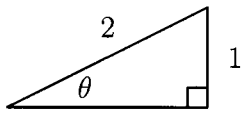
**10.** Find the value of $c$:

$\frac{\sqrt{3}}{2} = \frac{2}{c}$



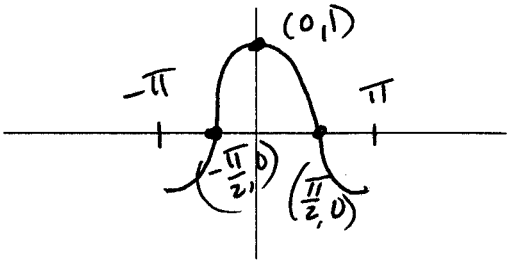

$c = \frac{4}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

**11.** Find the value of $\tan(\theta)$:




$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

**12.** Graph the function $y = \cos(x)$ for $-\pi \leq x \leq \pi$.
Label with the following values (if applicable): each intercept, location of each asymptote, and $(x, y)$ coordinates of each min and max.




**13.** Simplify and eliminate any negative exponents:

$$\left(8x^6\right)^{-2/3}$$

$\frac{1}{4x^4}$

**14.** Simplify:

$$\left(\frac{25}{64}\right)^{3/2}$$

$\frac{125}{512}$

**15.** Solve for $t$ (write answer as a rational number):

$$\left(\frac{1}{10}\right)^{5-2t} = 100$$

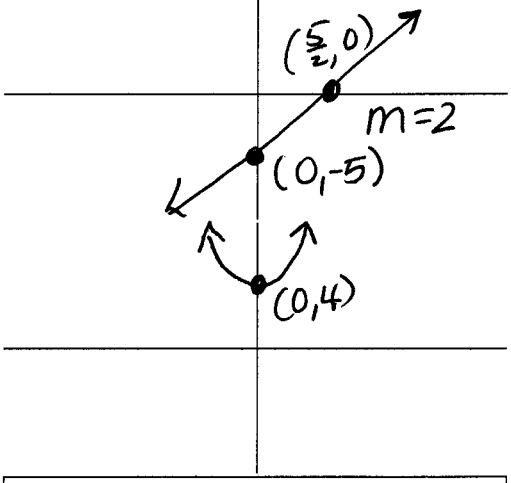
$t = \frac{7}{2}$

**16.** Solve for $x$:

$$5^{3-x} = 4$$

$x = 3 - \frac{\ln 4}{\ln 5} = 3 - \log_5 4$

**17.** Graph the equation $2x - y = 5$.
Label with the following values (if applicable): each intercept, slope, and $(x, y)$ coordinates of vertex.




**18.** Graph the function $y = x^2 + 4$.
Label with the following values (if applicable): each intercept, slope, and $(x, y)$ coordinates of vertex.




**19.** Find the area of a circle which has circumference 5 feet. $C = 5 = 2\pi r$ $\quad r = \frac{5}{2\pi}$ $\quad A = \pi r^2$ $\quad \pi\left(\frac{5}{2\pi}\right)^2$

$\frac{25}{4\pi}$ ft$^2$

**20.** Find the volume of a sphere of radius 3 cm.

$36\pi$ cm$^3$