Calculus ABC Test I—Version 3208 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:

$$\frac{8(x-3)}{5x} - \frac{2x+14}{5x}$$

$\frac{6x-38}{5x}$

2. Simplify by combining using a common denominator:

$$\frac{1}{x+1} + \frac{1}{x-1}$$

$\frac{2x}{(x+1)(x-1)}$

3. Solve for t:

$$7t - 4 = 3t + 8$$

$t = 3$

4. Solve for x:

$$\frac{3}{x} + \frac{5}{x+2} = 2$$

$x = -1, 3$

5. Solve for x:

$$\frac{3+x}{3-x} \geq 1$$

$0 \leq x < 3$

6. Find the equation of the line between the points $(5, 6)$ and $(-1, 3)$ in *point-slope* form.

$y - 6 = \frac{1}{2}x - \frac{5}{2}$

$y - 3 = \frac{1}{2}(x - -1)$

7. Find all roots of: $s^2 + 5s - 36 = 0$

$s = -9, 4$

8. Find the value of:

$$\tan(0)$$

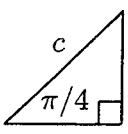
0

9. Find the value of:

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

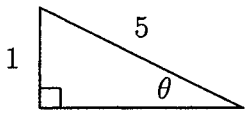
$\sqrt{3}$

10. Find the value of c:



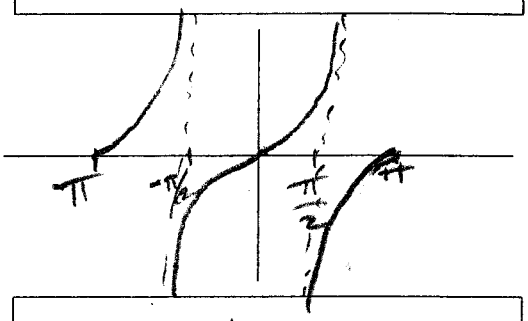
$2\sqrt{2}$ or $\sqrt{8}$

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



$\frac{\sqrt{24}}{5}$ or $\frac{2\sqrt{6}}{5}$

12. Graph the function $y = \tan(x)$ 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:

$$\left(\frac{1}{2}\right)^4 4^{-2}$$

$\frac{1}{256}$

14. Simplify:

$$\left(3x^2\right)^3$$

$9x^6$

15. Solve for x (write answer as a rational number):

$$\left(\frac{1}{4}\right)^{1-2x} = 2$$

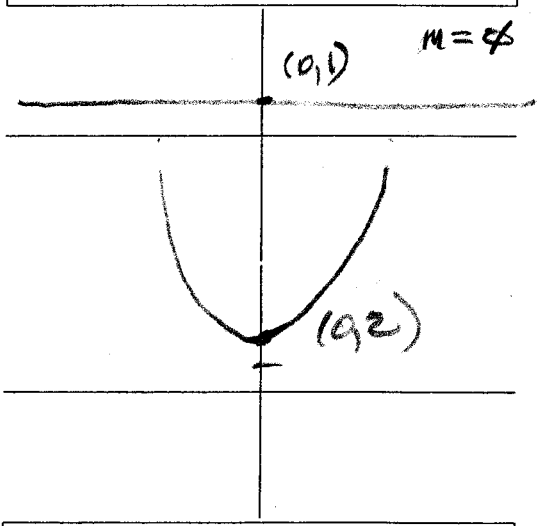
$x = \frac{3}{4}$

16. Solve for x:

$$2 \cdot 3^{12x} = 17$$

$x = \frac{\ln \frac{17}{2}}{12 \ln 3}$

17. Graph the function $y = 1$.
Label with the following values (if applicable): each intercept, slope, and (x, y) coordinates of vertex.



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

19. Find the area of a triangle which has base 8 miles and height 4 miles.

16 mi^2

20. Find the volume of a right circular cylinder (a can) with diameter 2 inches and height 3 inches.

$3\pi \text{ in}^3$