Calculus ABC Test I—Version 708 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:

$$\frac{x}{x+2} - \frac{2}{x^2-4}$$

$\frac{x^2-2x-2}{x^2-4}$

3. Solve for x:

$$\frac{4}{3x} = \frac{5}{6} + \frac{1}{2x}$$

$x=1$

4. Solve for x:

$$\sqrt{2x+1} + 1 = x$$

$x=4$

5. Solve for x:

$$2x \leq 7$$

$x \leq 7/2$

6. Find the equation of the line between the points $(0,1)$ and $(1,2)$ in *point-slope* form.

$y-2=1\cdot(x-1)$ or $y-1=1\cdot(x-0)$

7. Find all roots of: $s^2 - 2s - 15 = 0$

$S=-3,5$

8. Find the value of:

$$\sin(\pi)$$

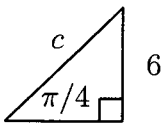
0

9. Find the value of:

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

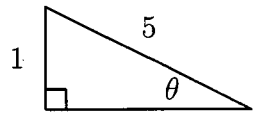
$\frac{\sqrt{2}}{2}$

10. Find the value of c:



$c=\frac{12}{\sqrt{2}}$ or $6\sqrt{2}$

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

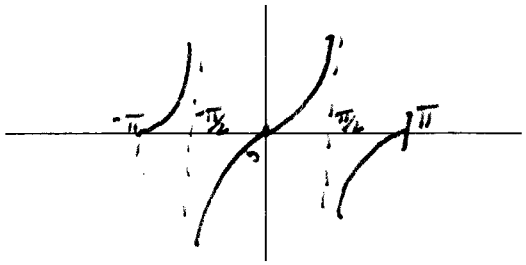


$\cot(\theta) = \sqrt{24}$

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

Asy: $(-\pi/2, 0), (\pi/2, 0)$

Int: $(-\pi, 0), (0, 0), (\pi, 0)$



13. Simplify and eliminate any negative exponents:

$$\left(\frac{4}{9}\right)^{-1/2}$$

$\frac{3}{2}$

14. Simplify:

$$z^{2/3} z^{1/5}$$

$z^{13/15}$

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

$$100^{3t+2} = 10$$

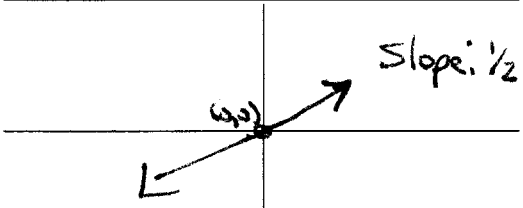
$t = -1/2$

16. Solve for x:

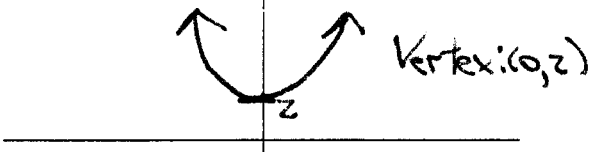
$$2^{3x} = 64$$

$x = \frac{\log 64}{\log 2}$ or $x = 2$

17. Graph the function $y = \frac{1}{2}x$.
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 circle which has diameter 10 cm.

$25\pi \text{ cm}^2$

20. Find the volume of a sphere of radius 2 mm.

$\frac{32}{3}\pi \text{ mm}^3$