1. Solve the equation $|2x - 2| = 17$.

   The solutions are $x_1 = _____$ and $x_2 = _____$ where $x_1 \leq x_2$.

   Correct Answers:
   - 7.5
   - 9.5

2. Solve the equation $\sqrt{10} - x + x = 8$.

   The only solution is $x = _____$.

   Correct Answers:
   - 6

3. Solve the following inequality. Write the answer in interval notation.

   $|2x - 9| \leq 12$

   Answer: _______________

   Correct Answers:
   - $[-1.5, 10.5]$

4. Find the point $(0, b)$ on the y-axis that is equidistant from the points $(5, 5)$ and $(3, -2)$.

   $b = _____$

   Correct Answers:
   - $25 + (5 - b)^2 = 9 + (2 + b)^2$ implies $b = \frac{37}{14} = 2.64285714285714$

5. Find the center and radius of the circle given by the equation

   $x^2 + y^2 + 12x + 8y + 43 = 0$

   The center is: $(____, ____)$

   The radius is: _____

   Correct Answers:
   - -6
   - -4
   - 3

6. A line through $(5, -5)$ with a slope of $-4$ has a $y$-intercept at _______

   Correct Answers:
   - 15

7. If $\sin(\theta) = \frac{24}{25}$, $0 \leq \theta \leq \pi/2$, then

   $\cos(\theta)$ equals _____

   $\tan(\theta)$ equals _____

   $\sec(\theta)$ equals _____

   Correct Answers:
   - $\frac{7}{25} = 0.28$
   - $\frac{24}{7} = 3.42857142857143$
   - $\frac{25}{7} = 3.57142857142857$

8. Evaluate the following expressions.

   $\sin(\cos^{-1}(\frac{7}{25}))$ _________

   $\tan(\sin^{-1}(\frac{5}{12}))$ _________

   Correct Answers:
   - $\frac{4}{5} = 0.8$
   - $\frac{5}{12} = 0.4166666666666667$

9. Evaluate the limit

   $\lim_{x \to 1} \frac{x^3 - 1}{x^2 - 1}$

   _________

   Correct Answers:
   - 1.5

10. Evaluate the limit

    $\lim_{x \to 0} \frac{\sin(2x^2)}{x^2}$

    _________

    Correct Answers:
    - 2

11. Evaluate the limit

    $\lim_{x \to 3} \frac{x - 3}{x^2 + 5x - 24}$

    _________

    Correct Answers:
    - $\frac{1}{11} = 0.090909090909090909$
12. For what value of the constant $c$ is the function $f$ continuous on $(-\infty, \infty)$ where

$$f(y) = \begin{cases} y^2 - c & \text{if } y \in (-\infty, 5) \\ cy + 3 & \text{if } y \in [5, \infty) \end{cases}$$

$c =$

Correct Answers:
- $7$
- $18$
- $-14$

13. If $34900$ dollars is invested at an interest rate of $7$ percent per year, compounded *semiannually*, find the value of the investment after the given number of years.

(a) $5$ years:
Your answer is _______

(b) $10$ years:
Your answer is _______

(c) $15$ years:
Your answer is _______

Correct Answers:
- $49229.8967456771$
- $69443.6313349579$
- $97957.1002941217$

14. Use the Laws of logarithms to rewrite the expression

$$\log(x^7y^{18}/z^{14})$$

in a form with no logarithm of a product, quotient or power.

After rewriting we have

$$\log(x^7 y^{18} / z^{14}) = A \log x + B \log y + C \log z$$

with the constant

$A =$

the constant

$B =$

and the constant

$C =$

Correct Answers:
- $7$
- $18$
- $-14$

15. If $\ln a = 2$, $\ln b = 3$, and $\ln c = 5$, evaluate the following:

(a) $\ln(a^{-4}) =$ _______

(b) $\ln\sqrt{b^4 c^{-4} a^4} =$ _______

(c) $\frac{\ln(a^{-3} b^7)}{\ln(bc)} =$ _______

(d) $(\ln c^3)(\ln \frac{n}{7^x})^{-3} =$ _______

Correct Answers:
- $-25$
- $0$
- $-1/8 = -0.125$
- $5/11^3 = 0.00375657400450789$

16. Find the solution of the exponential equation

$$e^{2x+1} = 17$$

in terms of logarithms, or correct to four decimal places.

$x =$

Correct Answers:
- $1/2(\ln(17) - 1) = 0.916606672028108$

17. Find the solution of the logarithmic equation

$$\log x + \log(x - 11) = \log(17x)$$

in terms of logarithms, or correct to four decimal places.

Your answer is

$x =$

Correct Answers:
- $28$