Name (printed legibly): Solutions

Directions: The quiz contains 15 problems, and each problem is worth one point. Place your answer in the blank provided to the right. **Calculators are not allowed.**

For this quiz only, no partial credit will be given.

1. Simplify the expression $\dfrac{(x^4y^{-2})^2}{x^3y^2}$. Write your answer without negative exponents.

$\dfrac{(x^4y^{-2})^2}{x^3y^2} = \dfrac{x^8y^{-4}}{x^3y^2} = \dfrac{x^5}{y^6}$

$\dfrac{x^5}{y^6}$

2. Find the equation of the line in slope intercept form ($y = mx+b$) passing through the points $(-1,5)$ and $(2,7)$

$y = mx+b$ $\quad m=?$ $\quad b=?$

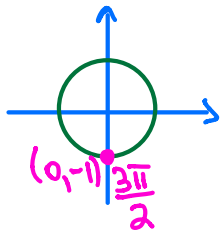
$(-1,5)$: $5 = -m+b$
$(2,7)$: $7 = 2m+b$
$\Rightarrow 3m = 2$ $\quad b = 5+\frac{2}{3}$

$m = \frac{2}{3}$ $\quad b = \frac{17}{3}$

$y = \frac{2}{3}x + \frac{17}{3}$

3. Find the exact value of $\sin\left(\frac{3\pi}{2}\right)$.

$\sin\left(\frac{3\pi}{2}\right) = -1$



-1

4. Solve for x in the equation $x^2+x=6$.

$x^2+x-6=0$

$(x+3)(x-2)=0$

$x_1=-3,\ x_2=2$

$x_1=-3,\ x_2=2$

5. Evaluate $9^{3/2}$. You should have no exponents in your final answer.

$9^{3/2} = (3^2)^{3/2} = 3^3 = 27$

27

6. Find the exact value of $\log_{10}\left(\frac{1}{100}\right)$.

-2

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

7. Expand and simplify $(3x+2)^2 - 5(x-1)$.

$9x^2+7x+9$

$(3x+2)^2 - 5x + 5 = 9x^2 + 12x + 4 - 5x + 5$

$= \boxed{9x^2+7x+9}$

8. Solve for x exactly in the equation $e^{3-2x} = 5$.

$\frac{\ln 5 - 3}{-2}$

$e^{3-2x} = 5$

$\ln e^{3-2x} = \ln 5$

$3 - 2x = \ln 5$

$\boxed{x = \frac{\ln 5 - 3}{-2}}$

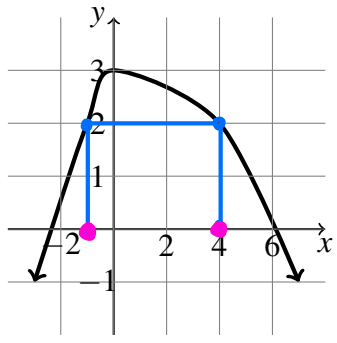
9. Determine the domain of $f(x) = \frac{1}{\sqrt{4-x}}$. Give your answer in interval notation.

$(-\infty, 4)$

$4 - x > 0$

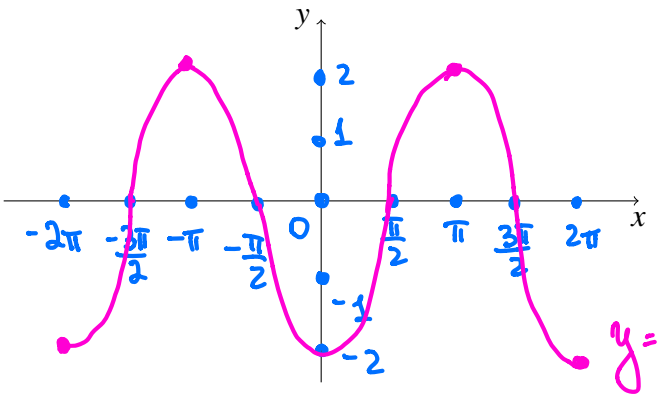
$x < 4$ or x in $\boxed{(-\infty, 4)}$

10. Use the graph of $f(x)$ below to estimate the value(s) of x such that $f(x) = 2$.



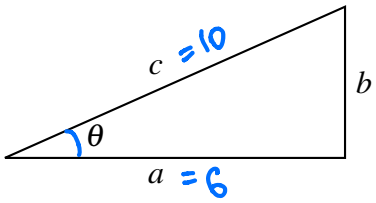
$x_1 = 4, \; x_2 = -1$

11. Sketch the graph of $y = -2\cos(x)$ on the interval $[-2\pi, 2\pi]$ and **label** the coordinates of the point where the graph intersects the y-axis.



$y = -2\cos(x)$

12. In the right triangle below, $a = 6$ and $c = 10$. Determine $\tan\theta$.



$100 = b^2 + 36$

$b^2 = 64$

$b = 8$

$\tan\theta = \frac{b}{a} = \frac{8}{6} = \boxed{\frac{4}{3}}$

$\frac{4}{3}$

13. Add the fractions and simplify the following expression: $\frac{1}{2+h} - \frac{1}{2}$.

$\frac{1}{2+h} - \frac{1}{2} = \frac{2-2-h}{2(2+h)} = \boxed{\frac{-h}{4+2h}}$

$\frac{-h}{4+2h}$

14. If $f(x) = 7x - 2$, find the formula for $f^{-1}(y)$.

$y = 7x - 2$

$7x = y + 2$

$x = \frac{1}{7}(y+2) = f^{-1}(y)$

$\frac{1}{7}(y+2)$

15. If $f(x) = x^2$ and $g(x) = x^3 + 4x$, find an expression for the composition $(g \circ f)(x)$.

$(g \circ f)(x) = g(f(x)) =$

$= g(x^2) = (x^2)^3 + 4 \cdot x^2 = x^6 + 4x^2$

$x^6 + 4x^2$