

TEST 4 ANSWERS

1) b 2) a 3) a 4) b 5) c 6) a 7) a 8) b 9) b 10) c 11) b 12) a 13) c 14) a 15) c
16) b 17) a 18) b 19) c 20) a 21) b 22) b 23) c 24) b 25) c 26) b 27) c 28) a 29) c 30) c

FULL SOLUTIONS BELOW

1) $15/20 - 12/20 = 3/20$

2) $(x-8)(x+2)=0$, so $x = 8$ or -2

3) $f(2) = 3(2)^3 - (2)^2 + (2) - 4 = 24 - 4 + 2 - 4 = 18$

4) foil it to get $x^4 - x^3 - 2x^2 + 2x + x - 1 = x^4 - x^3 - 2x^2 + 3x - 1$

5) $\frac{1}{\sqrt{6}-\sqrt{7}} * \frac{\sqrt{6}+\sqrt{7}}{\sqrt{6}+\sqrt{7}} = \frac{\sqrt{6}+\sqrt{7}}{\sqrt{36+\sqrt{42}-\sqrt{42}-\sqrt{49}}} = \frac{\sqrt{6}+\sqrt{7}}{6-7} = \frac{\sqrt{6}+\sqrt{7}}{-1} = -\sqrt{6}-\sqrt{7}$

6) $60 * \frac{\pi}{180} = \frac{60\pi}{180} = \frac{\pi}{3}$

7) Any value less than 7 creates an irrational number so $x \geq 7$

8) $(3^2)^x = \frac{3^3}{3^{1/2}}$, so $3^{2x} = 3^{5/2}$, so $2x = 5/2$, so $x = 5/4$

9) $\frac{1}{x^2-1} * \frac{x^2+1}{x^2+1} - \frac{1}{x^2+1} * \frac{x^2-1}{x^2-1} = \frac{x^2+1}{x^4-1} - \frac{(x^2-1)}{x^4-1} = \frac{2}{x^4-1}$

10) - divide the 8 in half to get 4
- square the 4 to get 16
- add the 16 to both sides
 $x^2 + 8x + 16 + y^2 = 9 + 16$
- factor the $x^2 + 8x + 16$ to $(x+4)^2 + y^2 = 25$
- the answer is just the opposite number of whatever numbers are added or subtracted to the x and y
- the answer is c) $(-4,0)$

11) - use the formula $\log_b X = k \Rightarrow b^k = X$
- the 3 is the b
- the 2 is the k
- $3^2 = X$
- the answer is 9

$$x=1$$

18. $2x^2 - 2x - 5 = 0$

Quadratic equation: $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$\frac{2 \pm \sqrt{[-2]^2 - 4(2)(-5)}}{2(2)}$$

$$= \frac{2 \pm \sqrt{44}}{4}$$

$$= \frac{2 \pm \sqrt{4} \sqrt{11}}{4}$$

$$= \frac{2 \pm 2\sqrt{11}}{4}$$

$$= \frac{1 \pm \sqrt{11}}{2}$$

19. $\frac{\sin x}{\cos x} * \tan x = \tan x * \tan x = \tan^2 x$

20. Parallel slopes are equal so the answer is $y = 3x - 2$

21) $\cos(-\pi/3) =$

$$\pi = 180$$

$\cos(-180/3) = -60$ cosine is positive in the fourth quadrant so...

$$\cos(-60) = 1/2$$

22) The correct answer is b)

$$f(x+1) = (x+1)^2 - 3(x+1) + 1$$

$$x^2 + 2x + 1 - 3x - 3 + 1$$

$$x^2 - x - 1$$

23) substituting values for x reveals 3^{x+1}

24) $\tan \theta = -3/4$ then opposite = -3 and adjacent = 4

$$a^2 + b^2 = c^2 \quad (-3)^2 + 4^2 = c^2$$

$$9 + 16 = 25$$

therefore $c = \text{hypotenuse} = 5$

$$\sin \theta = \text{opp/hyp}$$

This is in the fourth quadrant (All Students Take Calculus) in which sin is negative, so the answer is: $\sin \theta = -3/5$

25) $(6x^3 - 4x^2)/4x^2$

Since there is subtraction on the top, in order to cancel anything it has to be common in all terms. $2x^2$ is in each term, so we can reduce. Your answer will be: $(3x - 2)/ 2$. This cannot be reduced any further.

$$\begin{aligned}
 26. & [3-(2-3)]^2 + (-1)(-2)^2 \\
 & = [3-(-1)]^2 + (-1)(4) \\
 & = [4]^2 + (-4) \\
 & = 16 - 4 = 12
 \end{aligned}$$

$$\begin{aligned}
 27. & A = lw \\
 & 2l \cdot 2w = 4A \text{ area is quadrupled}
 \end{aligned}$$

$$\begin{aligned}
 28. & x^2 + 6x + 8 \leq 0 \\
 & (x+2)(x+4) \leq 0 \qquad \text{subbing in numbers shows that} \\
 & x = -2, -4 \qquad \qquad \qquad -4 \leq x \leq -2
 \end{aligned}$$

$$29. \pi = 180 \frac{3(180)}{2} \frac{540}{2} = 270$$

30.

The graph starts in the middle and goes up so it is a Sine graph.

There are 4 graphs in 2π

The vertical displacement is positive 3 So

The graph goes from +1 to +5 so $\frac{5-1}{2} = 2$ so amplitude is 2 so $y = 2\sin(4x) + 3$