TEST 2 ANSWERS

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

FULL SOLUTIONS BELOW

1. You need to find a common denominator.

1/4 x 3/3 = 3/12

3/12 - 8/12 = -5/12

-2/3 x 4/4 = -8/12

2. Plug the numbers into the formula and solve.

$\sqrt{(3)^2} \times 4/2$ solve the square $\sqrt{9}x4/2 = \sqrt{36}/2 = 6/2 = 3$

3. do inside brackets $16^{12}/4^{22}$ find common $(4^2)^{12}/4^{22}$
When you divide exponents, you just subtract them. 24-22=2
$4^2=16$

4. You need to conjugate.

$$\frac{1}{\sqrt{7}+\sqrt{3})} * \frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}-\sqrt{3}} = \frac{\sqrt{7}-\sqrt{3}}{\sqrt{49}-\sqrt{21}+\sqrt{21}-\sqrt{9}} = \frac{\sqrt{7}-\sqrt{3}}{\sqrt{49}-\sqrt{9}} = \frac{\sqrt{7}-\sqrt{3}}{7-3} = \frac{\sqrt{7}-\sqrt{3}}{4}$$

Middle cancels Perfect squares

5.need a common denominator.

$$\frac{(x+5)}{(x+5)} * \frac{1}{(x-5)} + \frac{1}{(x+5)} * \frac{(x-5)}{(x-5)} = \frac{x+5}{x^2-5x+5x-25} + \frac{x-5}{x^2-5x+5x-25} = \frac{2x}{x^2-25}$$

6. Find two numbers that add to get 7 and multiply to get -18, which are -2 and 9
(x+2)(x-9) what numbers will make the answer 0.
-2 +9

7. use formula $x^o = \pi/180$

$45\pi/180$ Reduce $\pi/4$

8. $(x-1)(x^2+2x+1)$ multiply first bracket by each term in the second bracket

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

9. We need to find opposite because we know that adjacent = 2 and hypotenuse = 3.
Use the Pythagorus theorem. $a^2 + b^2 = c^2$

$2^2 + b^2 = 3^2$
$b^2 = 9 - 4$
$b = \sqrt{5}$

$\text{Cos}\ominus = 2/3$ Then $\tan\ominus = \sqrt{5}/2$.

10. A perpendicular equation is just the negative reciprocal to the slope.
The slope of y = 4x - 1 is 4/1x. So the negative reciprocal is -1/4x.
The y intercept doesn't matter, just look at the slope.

11. Use Pythagorus. $6^2 + 6^2 = c^2$, so $\sqrt{72} = c$
You can break down $\sqrt{72}$. $\sqrt{36}\sqrt{2} = 6\sqrt{2}$

12. $3\pi/4 = 180$ so $3x180/4 = 540/4 = 135^o$

13.) First you have to substitute the given values into the formulas until one works for both.
The answer is, B) (-1,1)

14.) first use Pythagorus

$5^2 + b^2 = 6^2$
$25 + b^2 = 36 - 25$
(adj) $b = \sqrt{11}$

being in the second quadrant means only Sin is positive so the answer to $\text{Cos}\theta$ = must be negative

1st quadrant = all trig functions are positive
2nd quadrant = Sin function is positive
3rd quadrant = Tan function is positive
4th quadrant = Cos function is positive

$\sin\theta = 5 / 6$ then $\cos\theta = \sqrt{11} / 6$

15) -being our absolute value x can also be equal to -3
$-3 \leq [x+6] \leq 3$
-9 +6 = -3
-3 + 6 = 3
$= -9 \leq x \leq -3$

16) can't have a square root on the bottom so you must rationalize

$\frac{5}{\sqrt{5}} * \frac{(\sqrt{5})}{(\sqrt{5})} = \frac{5\sqrt{5}}{\sqrt{25}} = \frac{5\sqrt{5}}{5} = \sqrt{5}$

17) get all the (x's) on one side and the (y's) on the other side then solve for y

$x^3y + 3y = x^2y - 2y + x$ (minus $x^2y + 2y$)
$x^3y + 3y - x^2y + 2y = x$

factor out the y and divide both sides by $x^3 - x^2 + 5$

$= y(x^3 - x^2 + 5) / x^3 - x^2 + 5 = x / x^3 - x^2 + 5$

18) -we must the quadratic, $(-b \pm \sqrt{b^2 - 4ac} / 2a)$

$\frac{-6 \pm \sqrt{6^2 - 4(2)(1)}}{2(2)} = \frac{-6 \pm \sqrt{36 - 8}}{4} = \frac{-6 \pm \sqrt{28}}{4} = \frac{-6 \pm \sqrt{4}\sqrt{7}}{4} = \frac{-6 \pm 2\sqrt{7}}{4} = \frac{-3 \pm \sqrt{7}}{2}$

19) $y = 5x - 2$ just plug it in

$13 = 5(3) - 2$
$15 - 2$
(3,13) YES

20) $\log_5 x = 2$ (x = product , 2 = exponent, 5 = base)
rearrange and solve
$5^2 = x$
$x = 25$

21) $\log_3(2x - 4) - \log_3(2) = 2$
when you subtract logs you are actually dividing

$2x - 4 / 2 = x - 2$
$\log_3(x - 2)$ rearrange and solve
$3^2 = (x - 2)$
$9 = x - 2$ (+2)
$x = 11$

22) $27^x = \sqrt{3} / 9$ the square root is actually an exponent of 1 / 2
makes all a common base and give s and exponent

$3^3 = 3^{1/2} / 3^2$
$3^{3x} = 3^{1/2} / 3^2$ subtract
$3^{3x} = 3^{1/2-4/2}$
$3^{3x} = 3^{-3/2}$

-get rid of common base

3x / 3 = -3 / 2
x = -3 / 2 ✕ 1 / 3 = -3 / 6

reduce -3 / 6 = -1 / 2

23) - make a formula
total = 20
r = red
b = blue = 3r
20 = 3r + r
20 / 4 = 4r / 4
r = 5

24) Guess and Check
top and bottom = 3cm each
both sides = 6cm each
6 × 3 = 18

25) tan (-π /6) = tan(-180 /6) = tan (-30)
use the chart
tan(-30) = -√3 / 3

26) Any value of x less than 8 will result in a negative number, which creates an irrational number, so x must be greater than or equal to 8.

27) Substituting -1 into the x's gives us f(-1) = -1 + 2 + 1+1 = 3

28) cotx = $\frac{\cos x}{\sin x}$, so $\frac{\cos x}{\sin x}$ * sinx = cosx

29) y is negative in the third and fourth quadrants, so the answer is C
30) y= 3cos(2x)-1