

Midterm practice

44 questions –

20 questions on linear – 10 on Pythagoras – 15 exponential

1. $y = 3x - 2$

$y = 3x + 7$

tell me about these two lines

- parallel
- never cross
- different y-int

2. give the equation of the line through $(6,0)$ and has a slope -3

$y = mx + b$

$0 = -3(6) + b$

$0 = -18 + b$
 $+18 \quad +18$

 $18 = b$

$y = -3x + 18$

3. Can you find the equation of the line given...

- 2 points on the line Yes
- Equation of a line parallel to the line No
- Slope and a point on the line Yes
- Slope and the y-intercept Yes

4. How else can you write $y = 12/x$

$yx = 12$

$xy = 12$

$x = \frac{12}{y}$

5. Give the equation of the function

$m = \frac{4}{1} = 4$

change in y
change in x

| | | | | | | | | | |
|---|---|---|----|----|----|----|----|----|----|
| x | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| y | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 |

$\underbrace{\quad\quad\quad}_{+4}$
 $\underbrace{\quad\quad\quad}_{+4}$
 $\underbrace{\quad\quad\quad}_{+4}$
 $\underbrace{\quad\quad\quad}_{+4}$

back up the table to find y-intercept

$y = 4x - 4$

6. My friends and I went to breakfast. We shared a giant \$7 omelet and had 2 orange juices. After a \$3 off coupon the bill was \$9. How much were the orange juices?

$$7 + 2x - 3 = 9$$

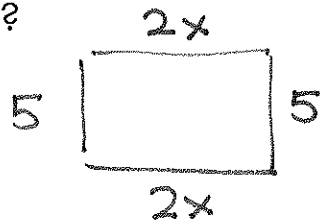
$$2x + 4 = 9 \quad \rightarrow \quad 2x = 5$$

$$x = 2.50$$

OJ's are \$2.50 each

omelet + 2 orange juices - 3 = 9

7. A rectangle with sides 5 in. and $2x$ in. with a perimeter is 26 in. What is x ?



$$5 + 2x + 5 + 2x = 26$$

$$10 + 4x = 26$$

$$4x = 16$$

$$x = 4$$

8. In the sequence. 6, 10, 14, 18, 22, 26, What is the 100th term?

| | | | | | | |
|---|---|----|----|----|----|----|
| x | 1 | 2 | 3 | 4 | 5 | 6 |
| y | 6 | 10 | 14 | 18 | 22 | 26 |

Arrows indicate a constant difference of 4 between consecutive y-values.

$$m = \frac{4}{1} = 4$$

$$b = 2$$

$$y = 4x + 2$$

plug 100 in....

$$y = 4(100) + 2$$

$$y = 400 + 2$$

$$y = 402$$

9. Find the equation of the function

| | | | | |
|---|---|----|----|----|
| x | 3 | 6 | 9 | 12 |
| y | 6 | 15 | 24 | 33 |

Arrows indicate a constant difference of 3 between consecutive x-values and a constant difference of 9 between consecutive y-values.

$$m = \frac{\text{change in } y}{\text{change in } x} = \frac{9}{3} = 3$$

$$y = 3x - 3$$

- 10.

~~$$\frac{x-5}{2} = \frac{2}{1}$$~~

~~$$4 = x - 5$$~~

$$9 = x$$

11. $-5x - 15 = 20$
 $\frac{\quad +15 \quad +15}{-5x = 35} \rightarrow x = -7$


12. $\frac{x}{4} + 9 = 19$
 $\frac{\quad -9 \quad -9}{\frac{x}{4} = 10} \rightarrow x = 40$

13. $-6x + 4 + 2x = 28$
like terms $\rightarrow -4x + 4 = 28$
 $\frac{\quad -4 \quad -4}{-4x = 24}$
 $\frac{\quad}{-4} \quad \frac{\quad}{-4} \rightarrow x = -6$

14. $19x - 5 = 25 + 9x$
 $\frac{-9x \quad -9x}{10x - 5 = 25}$
 $\frac{\quad +5 \quad +5}{10x = 30} \rightarrow x = 3$

15. $3(x + 2) = 27$
 $3x + 6 = 27$
 $\frac{\quad -6 \quad -6}{3x = 21} \rightarrow x = 7$

16. $82 = -3(x + 2) + x$
 $82 = -3x - 6 + x$
Like terms $\rightarrow 82 = -2x - 6$
 $\frac{\quad +6 \quad +6}{88 = -2x} \rightarrow x = -44$

17. A square pen for my dog is 144 square meters. What is the perimeter of the pen?
find side $A = 144$
 $\sqrt{A} \rightarrow 12$ 
 $12 + 12 + 12 + 12 = P$
 $48m = P$

18. What is the side length of a square with the area of 36?
 100? And 90?
 $A = 36 \rightarrow$ side is 6
 $A = 100 \rightarrow$ side is 10
 $A = 90 \rightarrow$ side is $\sqrt{90}$

$$a^2 + b^2 = c^2$$

19. $a = 12, c = 15$ $12^2 + b^2 = 15^2 \rightarrow 15^2 - 12^2 = c^2$
 $81 = c^2$

20. $a = 3, b = 10$

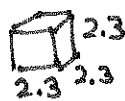
$$3^2 + 10^2 = c^2$$

$$109 = c^2$$

$$c = \sqrt{109} \approx 10.44$$

$$9 = c$$

21. A cube has the side length of 2.3. What is the volume?



$$2.3 \cdot 2.3 \cdot 2.3 = (2.3)^3 = 12.167 \text{ in}^3$$

22. What is the relationship between radius and diameter?

r is $\frac{1}{2}$ the diameter

diameter is twice the radius