

1

Factor  
 $81x^2 - 49 =$   
 $(9x)^2 - (7)^2 =$

$(9x+7)(9x-7) =$

for mulla  
 $a^2 - b^2 = (a+b)(a-b)$

1

$9x^2 - 49 =$

2.

Solve  
 $(2x+1)(5x-3) = 0$

Ans  $2x+1=0$  OR  $5x-3=0$

$2x+1-1=0-1$  OR  $5x-3+3=0+3$

$2x=-1$  OR  $5x=3$

$\frac{2x}{2} = \frac{-1}{2}$  OR  $\frac{5x}{5} = \frac{3}{5}$

$x = -\frac{1}{2}$  OR  $x = \frac{3}{5}$

M0320 TEST 1 step  
 07/01/17

3

Solve

$x^2 + 2x - 80 = 0$

$(x-8)(x+10) = 0$

Ans  $x-8=0$  OR  $x+10=0$

$x-8+8=0+8$  OR  $x+10-10=0-10$

$x=8$  OR  $x=-10$

30.1  
 40.2  
 20.4  
 10.8  
 Possible

4.

Solve

$x^2 - 7x - 18 = 0$

$(x+2)(x-9) = 0$

Ans  $x+2=0$  OR  $x-9=0$

$x+2-2=0-2$  OR  $x-9+9=0+9$

$x=-2$  OR  $x=9$

18.1  
 9.2  
 6.3  
 Possible

5.

Solve

$$x^2 - x = 72$$

$$x^2 - x - 72 = 72 - 72$$

$$x^2 - x - 72 = 0$$

$$(x + 8)(x - 9) = 0$$

or  $x + 8 = 0$  OR  $x - 9 = 0$

$$x + 8 - 8 = 0 - 8 \quad \text{OR} \quad x - 9 + 9 = 0 + 9$$

$$x = -8 \quad \text{OR} \quad x = 9$$

72.1  
36.2  
18.4  
9.8

possible

2

6.

Solve

$$x^2 + 3x = 28$$

$$x^2 + 3x - 28 = 28 - 28$$

$$x^2 + 3x - 28 = 0$$

$$(x - 4)(x + 7) = 0$$

or  $x - 4 = 0$  OR  $x + 7 = 0$

$$x - 4 + 4 = 0 + 4 \quad \text{OR} \quad x + 7 - 7 = 0 - 7$$

$$x = 4 \quad \text{OR} \quad x = -7$$

28.1  
14.2  
4.7

7.

Solve

$$2x^2 - 7x - 9 = 0$$

$$(2x - 9)(x + 1) = 0$$

or  $2x - 9 = 0$  OR  $x + 1 = 0$

$$2x - 9 + 9 = 0 + 9 \quad \text{OR} \quad x + 1 - 1 = 0 - 1$$

$$2x = 9 \quad \text{OR} \quad x = -1$$

$$\frac{2x}{2} = \frac{9}{2}$$

$$x = \frac{9}{2}$$

2.1

9.1  
3.3

8.

Solve

$$15x^2 - 8x = 0$$

$$x(15x - 8) = 0$$

or  $x = 0$  OR  $15x - 8 = 0$

$$15x - 8 + 8 = 0 + 8$$

$$15x = 8$$

OR  $\frac{15x}{15} = \frac{8}{15}$

$$x = \frac{8}{15}$$

3

9.

Solve

$$9x^2 - 16 = 0$$

$$(3x)^2 - (4)^2 = 0$$

$$(3x + 4)(3x - 4) = 0$$

or  $3x + 4 = 0$  OR  $3x - 4 = 0$

$$3x + 4 - 4 = 0 - 4 \quad \text{OR} \quad 3x - 4 + 4 = 0 + 4$$

$$3x = -4 \quad \text{OR} \quad 3x = 4$$

$$\frac{3x}{3} = \frac{-4}{3} \quad \text{OR} \quad \frac{3x}{3} = \frac{4}{3}$$

$$x = \frac{-4}{3} \quad \text{OR}$$

$$x = \frac{4}{3}$$

formula  
 $a^2 - b^2 = (a + b)(a - b)$

10.

Solve

$$3x^2 + 21x + 36 = 0$$

$$3(x^2 + 7x + 12) = 0$$

$$3(x + 3)(x + 4) = 0$$

or  $x + 3 = 0$   
 $x + 3 - 3 = 0 - 3$

$$x = -3$$

OR  $x + 4 = 0$

OR  $x + 4 - 4 = 0 - 4$

$$x = -4$$

possible

$$\begin{matrix} 12-1 \\ 6 \cdot 2 \\ 3 \cdot 4 \end{matrix}$$

11.

Solve

$$15x^2 + 31x + 1 = -9$$

$$15x^2 + 31x + 1 + 9 = -9 + 9$$

$$15x^2 + 31x + 10 = 0$$

$$(3x+5)(5x+2) = 0$$

wt  $3x+5=0$  OR  $5x+2=0$

$$3x+5-5=0-5 \text{ OR } 5x+2-x-x=0-2$$

$$3x=-5 \text{ OR } 5x=-2$$

$$\frac{3x}{3} = \frac{-5}{3} \text{ OR } \frac{5x}{5} = \frac{-2}{5}$$

$$x = -\frac{5}{3} \text{ OR } x = -\frac{2}{5}$$

15.1  
3.5

10.1  
2.5

4

12

Solve

$$10x^3 + 70x^2 + 120x = 0$$

$$10x(x^2 + 7x + 12) = 0$$

$$10x(x+3)(x+4) = 0$$

wt  $10x=0$  OR  $x+3=0$  OR  $x+4=0$

$$\frac{10x}{10} = \frac{0}{10} \text{ OR } x+3-3=0-3 \text{ OR } x+4-4=0-4$$

$$x=0 \text{ OR } x=-3 \text{ OR } x=-4$$

12.1  
6.2  
3.4

13

Solve

$$y^3 + 6y^2 + 9y = 0$$

$$y(y^2 + 6y + 9) = 0$$

$$y(y+3)(y+3) = 0$$

$$y=0 \text{ OR } y+3=0 \text{ OR } y+3=0$$
  
$$y+3-3=0-3 \text{ OR } y+3-3=0-3$$
  
$$y=-3 \text{ OR } y=-3$$

9.1, 3.3

Solve

14.

$$(3x+2)(9x^2+12x+4)=0$$

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

$$\begin{matrix} 9 \cdot 1 \\ 3 \cdot 3 \end{matrix}$$

$$\begin{matrix} 4 \cdot 1 \\ 2 \cdot 2 \end{matrix}$$

5

$$\text{but } 3x+2=0 \text{ or } 3x+2=0 \text{ or } 3x+2=0$$

$$3x+\cancel{x}-\cancel{x}=0-2 \text{ or } 3x+2-2=0-2 \text{ or } 3x+2-2=0-2$$

$$3x=-2 \text{ or } 3x=-2 \text{ or } 3x=-2$$

$$\frac{3x}{3} = \frac{-2}{3} \text{ or } \frac{3x}{3} = \frac{-2}{3} \text{ or } \frac{3x}{3} = \frac{-2}{3}$$

$$x = -\frac{2}{3} \text{ or } x = -\frac{2}{3} \text{ or } x = -\frac{2}{3}$$

15.

Solve

$$9x^3 - 16x = 0$$

$$x(9x^2 - 16) = 0$$

$$x((3x)^2 - (4)^2) = 0$$

$$x(3x+4)(3x-4) = 0$$

$$\text{but } x=0 \text{ or } 3x+4=0 \text{ or } 3x-4=0$$

$$3x+\cancel{4}-\cancel{4}=0-4 \text{ or } 3x-\cancel{4}+\cancel{4}=0+4$$

$$3x=-4 \text{ or } 3x=4$$

$$\frac{3x}{3} = \frac{-4}{3} \text{ or } \frac{3x}{3} = \frac{4}{3}$$

$$x = -\frac{4}{3} \text{ or } x = \frac{4}{3}$$

$$\text{formula } a^2 - b^2 = (a+b)(a-b)$$

16.

Solve

$$25x^3 - 30x^2 + 8x = 0$$

$$x(25x^2 - 30x + 8) = 0$$

$$x(5x-2)(5x-4) = 0$$

Ans  $x=0$  OR  $5x-2=0$  OR  $5x-4=0$

$$5x - \cancel{x} + \cancel{x} = 0 + 2 \quad \text{OR} \quad 5x - \cancel{4} + \cancel{4} = 0 + 4$$

$$5x = 2 \quad \text{OR} \quad 5x = 4$$

$$\frac{5x}{5} = \frac{2}{5} \quad \text{OR} \quad \frac{5x}{5} = \frac{4}{5}$$

$$x = \frac{2}{5} \quad \text{OR} \quad x = \frac{4}{5}$$

25-1  
5-5  
8-1  
2-4  
Possible  
6

17.

Simplify

$$\frac{2y}{4y+2} \cdot \frac{10y+5}{7} =$$

$$\frac{2y}{2(2y+1)} \cdot \frac{5(2y+1)}{7} =$$

$$\frac{5y}{7} =$$

18.

Simplify

$$\frac{x^2-y^2}{x+y} \div \frac{x}{x^2-xy} =$$

$$\frac{x^2-y^2}{x+y} \cdot \frac{x^2-xy}{x} =$$

$$\frac{(x+y)(x-y)}{(x+y)} \cdot \frac{x(x-y)}{x} =$$

$(x-y)(x-y) =$  OR  
 $(x-y)^2 =$

7.

19.  $\frac{x^2 - 8x}{x-6} + \frac{12}{x-6} =$  Simplify

$$\frac{(x^2 - 8x) + (12)}{x-6} =$$

$$\frac{x^2 - 8x + 12}{x-6} =$$

$$\frac{(x-2)(x-6)}{(x-6)} =$$

$$x-2 =$$

12-1  
6-2  
3-4 possible

Solve

20.

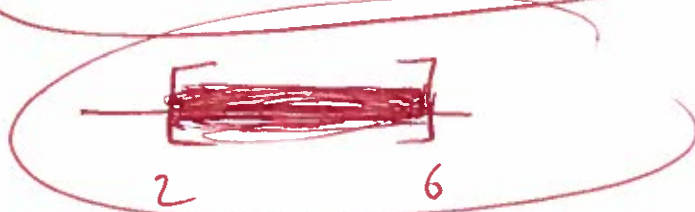
$$13 \leq 4t + 5 \leq 29$$

$$13 - 5 \leq 4t + 5 - 5 \leq 29 - 5$$

$$8 \leq 4t \leq 24$$

$$\frac{8}{4} \leq \frac{4t}{4} \leq \frac{24}{4}$$

$$2 \leq t \leq 6$$



$$[2, 6]$$

21.

Solve

$$|x+3|=6$$

$|x|=a$  formula  
 $x=-a$  or  $x=a$

8

or  $x+3=-6$  or  $x+3=6$

$$x+x-3=-6-3 \text{ or } x+x-3=6-3$$

$x=-9$  or  $x=3$

22.

Solve

$$|x+18| < 9$$

formula  
 $|x| < a$   
 $-a < x < a$

$$-9 < x+18 < 9$$

$$-9-18 < x+18-18 < 9-18$$

$-27 < x < -9$



$(-27, -9)$

23.

Solve

$$|x+3| > 4$$

$|x| > a$   
 $x < -a$  or  $x > a$

or  $x+3 < -4$  or  $x+3 > 4$

$$x+x-3 < -4-3 \text{ or } x+x-3 > 4-3$$

$x < -7$  or  $x > 1$



$(-\infty, -7) \cup (1, +\infty)$



9.

24

$$\sqrt{16x^{10}} =$$

$$\sqrt{4^2 x^{10}} =$$

$$4^1 x^5 =$$

$$4x^5 =$$

25.

$$f(x) = \sqrt{2x+7} \quad \text{find } f(37)$$

$$f(37) = \sqrt{2(37) + 7}$$

$$f(37) = \sqrt{74+7}$$

$$f(37) = \sqrt{81}$$

$$f(37) = 9$$