1) $\frac{-32}{3} \le x \le 14$

2) **Addition Property of Equality**

3) $\frac{29}{2}$ **or** $14\frac{1}{2}$

4) **2x + 3y = 14**

5) $x = -3, \frac{14}{5}$

6) **(x + 4 – 2y)(x + 4 + 2y)**

7) **$4500**

8) **7**

9) **63**

10) **–7**

11) **p > -1**

12) $y = \frac{-5}{9}(x+2)^2 + 7$

13) $y = 2x^2 - 5x$

14) $y = 2000(1.5^x)$

15) $\left(3, \frac{2}{5}\right)$

16) $\frac{(y+x)(y-x)}{x^2y^2}$ or $\frac{y^2 - x^2}{x^2y^2}$

17) $\sqrt{5}$

18) **step**

19) **23 + 6i**

20) **152**

21) **240**

22) **3**

23) $\frac{(x+2)^2}{81} + \frac{(y-5)^2}{16} = 1$

OR

$\frac{(x+2)^2}{9^2} + \frac{(y-5)^2}{4^2} = 1$

24) **165**

25) **singular matrix or does not exist**

1) $5-3x \le 37$ so $x \ge \frac{-32}{3}$ and $-(5-3x) \le 37$ So $x \le 14$ Therefore, $\mathbf{\frac{-32}{3} \le x \le 14}$

2) Addition Property of Equality

3) $D = \sqrt{(-4-1)^2 + (9+3)^2}$

$= 13$ $X = \frac{-4+1}{2} = \frac{-3}{2}$ $Y = \frac{9-3}{2} = 3$ $13 + \frac{-3}{2} + 3 = \mathbf{\frac{29}{2}}$ **or** $\mathbf{14\frac{1}{2}}$

4) $2x + 3y = c$ $2(-2) + 3(6) = c$ $14 = c$ **$2x + 3y = 14$**

5) $(2x-5)(3x+2) - (x-3)(x-9) = 5$
$6x^2-11x-10-x^2+12x-27 = 5$
$5x^2 + x - 42 = 0$
$(x+3)(5x-14) = 0$
$\mathbf{x = -3, \frac{14}{5}}$

6) $(x + 4)^2 - 4y^2$ **$(x + 4 - 2y)(x + 4 + 2y)$**

7)
$\frac{10,000}{4} = 2500$
$2500 \cdot 7 = 17,500$
$22,000 - 17,500 =$ **$4500**

8) $9 - 2 =$ **7**

9)
$_7P_2 = \frac{7!}{2!} = 7 \cdot 6 = 42$
$_7C_2 = \frac{7!}{2!5!} = \frac{42}{2} = 21$
$42 + 21 =$ **63**

10) $g^{-1}(x) = \frac{x-3}{2}$, $g^{-1}(3) = \frac{3-3}{2} = 0$, $f(0) =$ **$-7**

11) $4^{3p-1} > 4^{-4}$ $3p-1 > -4$ **$p > -1$**

12) $2 = a(-5 + 2)^2 + 7$ $\quad \frac{-5}{9} = a$

$$y = \frac{-5}{9}(x + 2)^2 + 7$$

13) $c = 0$ $\qquad 7 = a - b$

$42 = 36a + 6b$ $\qquad a = 2, b = -5$ $\qquad \mathbf{y = 2x^2 - 5x}$

14) $y = ab^x$ $\quad 4500 = 2000b^2$ $\quad 2.25 = b^2$ $\quad 1.5 = b$ $\quad \mathbf{y = 2000(1.5^x)}$

15) $f(x) = \dfrac{(x - 3)(x - 1)}{(x - 3)(x + 2)}$

$\left(3, \frac{2}{5}\right)$

16)

$$\frac{\frac{1}{x^4} - \frac{1}{y^4}}{\frac{1}{x^2} + \frac{1}{y^2}} \cdot \frac{x^4y^4}{x^4y^4}$$

$$\frac{y^4 - x^4}{x^2y^4 + x^4y^2}$$

$$\frac{(y^2 + x^2)(y + x)(y - x)}{x^2y^2(y^2 + x^2)}$$

$$\mathbf{\frac{(y + x)(y - x)}{x^2y^2}}$$

17) $\dfrac{5}{\sqrt[4]{5^2}} \cdot \dfrac{\sqrt[4]{5^2}}{\sqrt[4]{5^2}} = \dfrac{5\sqrt{5}}{5} = \mathbf{\sqrt{5}}$

18) step

19) $A = 9 + 6i + i^2 = \quad 8 + 6i$

$B = 9 - i^2 \quad = \quad 10$

$C = \quad\quad\quad\quad 5$

$\mathbf{23 + 6i}$

20) $t_{51} = 2 + (51 - 1)(3) =$ **152**

21) $5! \bullet 2 = 120 \bullet 2 =$ **240**

22) $x = \sqrt{6 + x}$

$x^2 = 6 + x$

$x^2 - x - 6 = 0$

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

$x =$ **3**, -2 is extraneous

23) center : (-2, 5); r_x : 9; r_y : 4

$$\frac{(x+2)^2}{81} + \frac{(y-5)^2}{16} = 1$$

OR

$$\frac{(x+2)^2}{9^2} + \frac{(y-5)^2}{4^2} = 1$$

24) Use formula $S_n = \frac{n}{2}(a_1 + a_n)$**; n = 11, First term = 20, and nth term = 10. 11/2(30) = 165.**

25) determinant = 12 – 12 = 0

singular matrix or NO DETERMINANT