

1) $7y + 2 = 15 + 3y$

(a) $-\frac{4}{13}$

(b) $\frac{4}{13}$

(c) $\frac{13}{4}$

(d) $-\frac{13}{4}$

TSi Multiple Choice TSi 29 001
012415

2) $\frac{x}{8} = \frac{x+1}{9}$

(a) $x = -6$

(b) $x = 6$

(c) $x = 8$

(d) $x = -8$

3) $1 + \frac{6}{x} = -11$

(a) $x = 2$

(b) $x = -2$

(c) $x = -\frac{1}{2}$

(d) $x = \frac{1}{2}$

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

(a) $x = -6$

(b) $x = 6$

(c) $x = 4$

(d) $x = -4$

5) Find C if $k = C + 293$ and $k = 20$

(a) $C = -263$

(b) $C = 263$

(c) $C = -273$

(d) $C = 273$

6) $6(x - 2) - 12 = 2x$

(a) $x = -4$

(b) $x = 4$

(c) $x = 6$

(d) $x = -6$

7) Find y if $3x + 5y = 29$ and $x = 3$

(a) $y = -2$

(b) $y = 2$

(c) $y = 4$

(d) $y = -4$

8) $x - 20 = 5x - 20$

(a) $x = 40$

(b) $x = 4$

(c) $x = 0$

(d) $x = -4$

9) $10 - x = x - 10$

(a) $x = 5$

(b) $x = 0$

(c) $x = 10$

(d) $x = -10$

10) $\frac{x}{4} + \frac{3x}{8} > 10$

(a) $x < 8$

(b) $x > 8$

(c) $x > 16$

(d) $x < 16$

11. Find $f(4)$ if $f(x) = \frac{x+10}{x-5}$

TSI 29 002

(a) $f(4) = 12$ (b) $f(4) = 0$ (c) $f(4) = -14$ (d) $f(4) = 14$

12. Find A if $A = \pi r^2$, $\pi = 3.14$, $r = 6$

(a) $A = 1.1304$ (b) $A = 11.304$ (c) $A = 113.04$ (d) $A = 1130.4$

13. Find C if $C = \frac{5}{9}(F - 32)$, $F = 50$

(a) $C = 6$ (b) $C = 8$ (c) $C = 10$ (d) $C = 9$

14. Find $f(-3)$ if $f(x) = 2x^2 - 4x - 10$

(a) $f(-3) = -10$ (b) $f(-3) = 10$ (c) $f(-3) = 20$ (d) $f(-3) = -20$

15. Find $f(8)$ if $f(x) = x^{-2}$

(a) $f(8) = 8$ (b) $f(8) = 64$ (c) $f(8) = \frac{1}{64}$ (d) $f(8) = \frac{1}{8}$

16. Find $f(\frac{1}{4})$ if $f(x) = \frac{1}{x} + \frac{3}{x}$

(a) $f(\frac{1}{4}) = -4$ (b) $f(\frac{1}{4}) = 4$ (c) $f(\frac{1}{4}) = 16$ (d) $f(\frac{1}{4}) = -16$

17. Simplify $(\frac{2x}{3y})(\frac{27y}{8x^2})$

(a) $8x$ (b) $4x$ (c) $\frac{9}{4x}$ (d) $\frac{9}{2x}$

18. Simplify $\frac{x+4x^2}{x}$

(a) $1 + x^2$ (b) $x + 4$ (c) $1 + 4x$ (d) $1 + 2x$

19. Find N if $a^2 + N + 8b^2 = (a+b)(a+8b)$

(a) $N = 2ab$ (b) $N = 6ab$ (c) $N = 9ab$ (d) $N = 8ab$

TSI 29003
20 Find V if $V = \pi r^2 h$, $r = 6a$, $h = 2a + 5$

(a) $V = 36\pi a^3 + 180\pi a^2$ (b) $V = 36\pi a^3 + 180a^2$

(c) $V = 72\pi a^3 + 180\pi a^2$ (d) $V = 72\pi a^3 + 180\pi a$

21 Find the area of a rectangle if
 $L = x + 3$ and $W = 2x - 9$

(a) $A = 2x^2 - 3x + 26$

(b) $A = 2x^2 + 3x + 27$

(c) $A = 2x^2 - 3x - 27$

(d) $A = 2x^2 + 3x - 27$

22 Simplify $(2xy^8)^4$

(a) $2x^4y^{32}$ (b) $8x^4y^{32}$

(c) $16x^4y^{32}$ (d) $16x^3y^{31}$

23 Find x if $\frac{ax-b}{4a-1} = b$

(a) $x = 8b$

(b) $x = 3b$

(c) $x = 4b$

(d) $x = 2b$

24 Simplify $\frac{-45x^8y^7z^{11}}{-30x^2y^5z^4}$

(a) $\frac{9x^5y^2z^{11}}{4}$

(b) $\frac{3x^5y^2z^7}{2}$

(c) $\frac{3x^6y^2z^7}{2}$

(d) $\frac{3x^6y^2z^7}{4}$

25 Factor $\frac{9x^2}{16} - \frac{25y^2}{49}$

(a) $\left(\frac{4x}{3} + \frac{7y}{5}\right)\left(\frac{4x}{3} - \frac{7y}{5}\right)$ (b) $\left(\frac{3x}{4} + \frac{5y}{7}\right)\left(\frac{3x}{4} + \frac{5y}{7}\right)$

(c) $\left(\frac{3x}{4} + \frac{5y}{7}\right)\left(\frac{3x}{4} - \frac{5y}{7}\right)$ (d) $\left(\frac{3x}{4} - \frac{5y}{7}\right)\left(\frac{3x}{4} - \frac{5y}{7}\right)$

26 Solve $x^2 + 2 = -3x$

TS129 004

- (a) $\{1, -3\}$ (b) $\{-1, -3\}$ (c) $\{-1, -2\}$ (d) $\{-1, 2\}$

27 Solve $(x+2)^2 = 9$

- (a) $\{-9, 9\}$ (b) $\{5, 1\}$ (c) $\{-5, 1\}$ (d) $\{-5, -1\}$

28 Solve $\sqrt{x} + 2 = 5$

- (a) $x = -5$ (b) $x = 5$ (c) $x = 9$ (d) $x = -9$

29 Solve
$$\begin{aligned} 3x + 2y &= 5 \\ 4x + 7y &= 11 \end{aligned}$$

(a) $(x, y) = (-1, 1)$

(b) $(x, y) = (1, -2)$

(c) $(x, y) = (1, 1)$

(d) $(x, y) = (-1, -2)$

1) $7y + 2 = 15 + 3y$

2) $\frac{x}{8} = \frac{x+1}{9}$

3) $1 + \frac{6}{x} = -11$

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

5) Find C if $k = C + 293$ and $k = 20$

6) $6(x - 2) - 12 = 2x$

7) Find y if $3x + 5y = 29$ and $x = 3$

8) $x - 20 = 5x - 20$

9) $10 - x = x - 10$

10) $\frac{x}{4} + \frac{3x}{8} > 10$

11) Find $f(4)$ if $f(x) = \frac{x+10}{x-5}$

12) Find A if $A = \pi r^2$, $\pi = 3.14$, $r = 6$

13) Find C if $C = \frac{5}{9}(F - 32)$, $F = 50$

14) Find $f(-3)$ if $f(x) = 2x^2 - 4x - 10$

15) Find $f(8)$ if $f(x) = x^{-2}$

16) Find $f(\frac{1}{4})$ if $f(x) = \frac{1}{x} + \frac{3}{x}$

17) Simplify $(\frac{2x}{3y})(\frac{27y}{8x^2})$

18) Simplify $\frac{x + 4x^2}{x}$

19) Find N if $a^2 + N + 8b^2 = (a+b)(a+8b)$

20) Find V if $V = \pi r^2 h$, $r = 6a$, $h = 2a + 5$

21) Find area of a rectangle if $L = x + 3$, $W = 2x - 9$

22) Simplify $(2xy^8)^4$

23) Find X if $\frac{ax-b}{4a-1} = b$

24) Simplify $\frac{-45x^8y^7z^{11}}{-30x^2y^5z^4}$

25) Factor $\frac{9x^2}{16} - \frac{25y^2}{49}$

26) Solve $x^2 + 2 = -3x$

27) Solve $(x+2)^2 = 9$

28) Solve $\sqrt{x} + 2 = 5$

29) Solve
 $3x + 2y = 5$
 $4x + 7y = 11$

092415

TSI 29

$$\begin{aligned} \textcircled{1} \quad 7y + 2 &= 15 + 3y \\ 7y + 2 - 2 &= 15 + 3y - 2 \\ 7y &= 3y + 13 \\ 7y - 3y &= 3y + 13 - 3y \\ 4y &= 13 \end{aligned}$$

$$\frac{4y}{4} = \frac{13}{4}$$

$$y = \frac{13}{4}$$

$$\textcircled{2} \quad \frac{x}{8} = \frac{x+1}{9}$$

$$9(x) = 8(x+1)$$

$$9x = 8x + 8$$

$$9x - 8x = 8x + 8 - 8x$$

$$1x = 8$$

$$x = 8$$

Cross
mult

$$\textcircled{3} \quad 1 + \frac{6}{x} = -11$$

$$1 + \frac{6}{x} - 1 = -11 - 1$$

$$\frac{6}{x} = -12$$

$$\frac{6}{x} = \frac{-12}{1}$$

$$1(6) = -12(x)$$

$$6 = -12x$$

$$\frac{6}{-12} = \frac{-12x}{-12}$$

$$-\frac{6}{12} = x$$

$$-\frac{6(1)}{6(2)} = x$$

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

Cross
mult

2.

$$(4) \quad 4 - x = 2(x - 4)$$

$$4 - x = 2x - 8$$

$$\cancel{4} - x - \cancel{4} = 2x - 8 - 4$$

$$-x = 2x - 12$$

$$-x - 2x = \cancel{2x} - 12 - \cancel{2x}$$

$$-1x - 2x = -12$$

$$-3x = -12$$

$$\frac{-3x}{-3} = \frac{-12}{-3}$$

$$x = 4$$

(5) Find C if $k = C + 293$ and $k = 20$

$$k = C + 293$$

$$20 = C + 293$$

$$20 - 293 = C + \cancel{293} - \cancel{293}$$

$$-273 = C$$

(6) $6(x - 2) - 12 = 2x$

$$6x - 12 - 12 = 2x$$

$$6x - 24 = 2x$$

$$6x - \cancel{24} + \cancel{24} = 2x + 24$$

$$6x = 2x + 24$$

$$6x - 2x = \cancel{2x} + 24 - \cancel{2x}$$

$$4x = 24$$

$$\frac{4x}{4} = \frac{24}{4}$$

$$x = 6$$



⑦ Find y if $3x + 5y = 29$ and $x = 3$

$$3x + 5y = 29$$

$$3(3) + 5y = 29$$

$$9 + 5y = 29$$

$$9 + 5y - 9 = 29 - 9$$

$$5y = 20$$

$$\frac{5y}{5} = \frac{20}{5}$$

$$y = 4$$



⑧

$$x - 20 = 5x - 20$$

$$x - \cancel{20} + \cancel{20} = 5x - \cancel{20} + \cancel{20}$$

$$x = 5x$$

$$x - 5x = 5x - 5x$$

$$1x - 5x = 0$$

$$-4x = 0$$

$$\frac{-4x}{-4} = \frac{0}{-4}$$

$$x = 0$$

⑨

$$10 - x = x - 10$$

$$\cancel{10} - x - \cancel{10} = x - \cancel{10} - \cancel{10}$$

$$-x = x - 20$$

$$-x - x = x - 20 - x$$

$$-1x - 1x = -20$$

$$-2x = -20$$

$$\frac{-2x}{-2} = \frac{-20}{-2}$$

$$x = 10$$

⑩ $\frac{x}{4} + \frac{3x}{8} > 10$ $LCD = 8$

$$\frac{x}{4}(8) + \frac{3x}{8}(8) > \frac{10}{1}(8)$$

$$x(2) + 3x(1) > 10(8)$$

$$2x + 3x > 80$$

$$5x > 80$$

$$\frac{5x}{5} > \frac{80}{5}$$

$$x > 16$$

$$\begin{array}{r} 16 \\ 5 \overline{) 80} \\ \underline{-(5)} \\ 30 \\ \underline{-(30)} \\ 0 \end{array} \quad \text{17m}$$

⑪ Find $f(4)$ if $f(x) = \frac{x+10}{x-5}$

$$f(x) = \frac{x+10}{x-5}$$

$$f(4) = \frac{(4)+10}{(4)-5}$$

$$f(4) = \frac{4+10}{4-5}$$

$$f(4) = \frac{14}{-1}$$

$$f(4) = -14$$

⑫ Find A if $A = \pi r^2$, $\pi = 3.14$, $r = 6$

$$A = \pi r^2$$

$$A = 3.14(6)^2$$

$$A = 3.14(6)(6)$$

$$A = 3.14(36)$$

$$A = 113.04$$

$$\begin{array}{r} 3.14 \\ \times 36 \\ \hline 1884 \\ 942 \\ \hline 113.04 \end{array}$$

13. Find C if $C = \frac{5}{9}(F - 32)$, $F = 50$

$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(50 - 32)$$

$$C = \frac{5}{9}(18)$$

$$C = 5(2)$$

$$C = 10$$

14. Find $f(-3)$ if $f(x) = 2x^2 - 4x - 10$

$$f(x) = 2x^2 - 4x - 10$$

$$f(-3) = 2(-3)^2 - 4(-3) - 10$$

$$f(-3) = 2(-3)(-3) - 4(-3) - 10$$

$$f(-3) = 2(9) - 4(-3) - 10$$

$$f(-3) = 18 + 12 - 10$$

$$f(-3) = 30 - 10$$

$$f(-3) = 20$$

15. Find $f(8)$ if $f(x) = x^{-2}$

$$f(x) = x^{-2}$$

$$f(8) = 8^{-2}$$

$$f(8) = \frac{1}{8^2}$$

$$f(8) = \frac{1}{8 \cdot 8}$$

$$f(8) = \frac{1}{64}$$



⑩ Find $f(\frac{1}{4})$ if $f(x) = \frac{1}{x} + \frac{3}{x}$

$$f(x) = \frac{1}{x} + \frac{3}{x}$$

$$f(\frac{1}{4}) = \frac{1}{\frac{1}{4}} + \frac{3}{\frac{1}{4}}$$

$$f(\frac{1}{4}) = \frac{1}{\frac{1}{4}} + \frac{3}{\frac{1}{4}}$$

$$f(\frac{1}{4}) = \frac{1 \cdot 4}{1} + \frac{3 \cdot 4}{1}$$

$$f(\frac{1}{4}) = \frac{4}{1} + \frac{12}{1}$$

$$f(\frac{1}{4}) = 4 + 12$$

$$f(\frac{1}{4}) = 16$$

⑪ Simplify $(\frac{2x}{3y})(\frac{27y}{8x^2})$

$$(\frac{2x}{3y})(\frac{27y}{8x^2}) =$$

$$\frac{\cancel{2x} \cdot \cancel{3} \cdot \cancel{3} \cdot \cancel{3} \cdot \cancel{y}}{\cancel{3y} \cdot 2 \cdot 2 \cdot 2 \cdot \cancel{x} \cdot \cancel{x}} =$$

$$\frac{9}{4x} =$$

⑫ Simplify $\frac{x + 4x^2}{x}$

$$\frac{x}{x} + \frac{4x^2}{x} =$$

$$1 + 4x =$$



Primes 2, 3, 5, 7

$$\begin{array}{r} 3 \overline{) 27} \quad 2 \overline{) 8} \\ 3 \overline{) 9} \quad 2 \overline{) 4} \\ 3 \overline{) 3} \quad 2 \overline{) 2} \\ \quad \quad 1 \end{array}$$

$$27 = 3 \cdot 3 \cdot 3$$

$$8 = 2 \cdot 2 \cdot 2$$

19. Find N if $a^2 + N + 8b^2 = (a+b)(a+8b)$

$$\begin{aligned} a^2 + N + 8b^2 &= (a+b)(a+8b) \\ &= a^2 + 8ab + ab + 8b^2 \\ &= a^2 + 8ab + 1ab + 8b^2 \\ &= a^2 + 9ab + 8b^2 \end{aligned}$$

$N = 9ab$

20. Find V if $V = \pi r^2 h$, $r = 6a$, $h = 2a + 5$

$$V = \pi r^2 h$$

$$V = \pi (6a)^2 (2a + 5)$$

$$V = \pi (6a)(6a)(2a + 5)$$

$$V = \pi (36a^2)(2a + 5)$$

$$V = \pi (72a^3 + 180a^2)$$

$$V = 72\pi a^3 + 180\pi a^2$$

$$\begin{array}{r} 3 \\ 36 \\ \times 5 \\ \hline 180 \end{array}$$

21. Find area of a rectangle if $L = x + 3$ and $w = 2x - 9$

$$A = L \cdot w$$

$$A = (x + 3)(2x - 9)$$

$$A = 2x^2 - 9x + 6x - 27$$

$$A = 2x^2 - 3x - 27$$

(22.) Simplify $(2xy^8)^4$

$$(2xy^8)^4 =$$

$$(2^1 x^1 y^8)^4 =$$

$$2^4 x^4 y^{32} =$$

$$(2)(2)(2)(2) x^4 y^{32} =$$

$$16x^4y^{32} =$$

(23.) Find x if $\frac{ax-b}{4a-1} = b$

$$\frac{ax-b}{4a-1} = \frac{b}{1}$$

$$1(ax-b) = b(4a-1) \quad \nearrow \text{Cross Mult}$$

$$ax - b = 4ab - b$$

$$ax - \cancel{b} + \cancel{b} = 4ab - \cancel{b} + \cancel{b}$$

$$ax = 4ab$$

$$\frac{\cancel{a}x}{\cancel{a}} = \frac{4\cancel{a}b}{\cancel{a}}$$

$$x = 4b$$

9.

(24) simplify $\frac{-45x^8y^7z^{11}}{-30x^2y^5z^4}$

$$\frac{-45x^8y^7z^{11}}{-30x^2y^5z^4} =$$

$$\frac{-15(3)x^{8-2}y^{7-5}z^{11-4}}{-15(2)} =$$

$$\frac{3x^6y^2z^7}{2}$$

10.

(25) Factor $\frac{9x^2}{16} - \frac{25y^2}{49}$

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

$$\frac{9x^2}{16} - \frac{25y^2}{49} =$$

$$\left(\frac{3x}{4}\right)^2 - \left(\frac{5y}{7}\right)^2 =$$

$$\left(\frac{3x}{4} + \frac{5y}{7}\right)\left(\frac{3x}{4} - \frac{5y}{7}\right) =$$

(26) Solve $x^2 + 2 = -3x$

$$x^2 + 2 + 3x = -3x + 3x \quad x+1-1=0-1 \quad \text{OR} \quad x+2-2=0-$$

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

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

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

set $x+1=0$ OR $x+2=0$

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

(27) Solve $(x+2)^2 = 9$

$$(x+2)^2 = 9$$

$$\sqrt{(x+2)^2} = \pm\sqrt{9}$$

$$x+2 = \pm 3$$

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

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

$$x = -5 \quad \text{OR} \quad x = 1$$



(28) Solve $\sqrt{x+2} = 5$

$$\sqrt{x+2} = 5$$

$$\sqrt{x+2}-2 = 5-2$$

$$\sqrt{x} = 3$$

$$(\sqrt{x})^2 = (3)^2$$

$$x = 9$$

(29) Solve $3x+2y=5$
 $4x+7y=11$

$$\begin{pmatrix} 3x+2y=5 \\ 4x+7y=11 \end{pmatrix} \begin{pmatrix} -7 \\ 2 \end{pmatrix}$$

$$-21x - 14y = -35$$

$$8x + 14y = 22$$

$$-13x = -13$$

$$\frac{-13x}{-13} = \frac{-13}{-13}$$

$$x = 1$$

Subst

$$3x+2y=5$$

$$3(1)+2y=5$$

$$3+2y=5$$

$$2y = 5-3$$

$$2y = 2$$

$$\frac{2y}{2} = \frac{2}{2}$$

$$y = 1$$

$$\begin{pmatrix} x, y \\ 1, 1 \end{pmatrix}$$