TSI29 1. 042416

TSI Multiple Choice

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

   (a) $y = -\frac{4}{13}$ (b) $y = \frac{4}{13}$ (c) $y = \frac{13}{4}$ (d) $y = -\frac{13}{4}$

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) $x = -4$

2.

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

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

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

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

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

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

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

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

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

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

(a) $x+x^2$ (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) $N=8ab$

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

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

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

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

(5)

① $7y + 2 = 15 + 3y$

$7y + 2 - 2 = 15 + 3y - 2$

$7y = 3y + 13$

$7y - 3y = 3y + 13 - 3y$

$4y = 13$

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

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

② $\frac{x}{8} = \frac{x+1}{9}$

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

$9x = 8x + 8$

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

$1x = 8$

$x = 8$

③ $1 + \frac{6}{x} = -11$

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

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

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

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

$6 = -12x$

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

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

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

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

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

$4-x=2x-8$

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

$-x=2x-12$

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

$-1x-2x=-12$

$-3x=-12$

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

$x=4$

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

$k=C+293$

$20=C+293$

$20-293=C+293-293$

$-273=C$

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

$6x-12-12=2x$

$6x-24=2x$

$6x-24+24=2x+24$

$6x=2x+24$

$6x-2x=2x+24-2x$

$4x=24$

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

$x=6$

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. $x-20=5x-20$

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

$x=5x$

$1x-5x=5x-5x$

$-4x=0$

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

$x=0$

9. $10-x=x-10$

$10-x-10=x-10-10$

$-x=x-20$

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

$-1x-1x=-20$

$-2x=-20$

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

$x=10$

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

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

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

$2x + 3x > 80$

$5x > 80$

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

$x > 16$

(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 $A = \pi r^2$, $\pi = 3.14$ and $r = 6$

$A = \pi r^2$

$A = 3.14(6)^2$

$A = 3.14(6)(6)$

$A = 3.14(36)$

$A = 113.04$

$$\begin{array}{r} {}^{2}\,{}^{1} \\ 3.14 \\ \times \quad 36 \\ \hline 1884 \\ 942 \\ \hline 113.04 \end{array}$$

9

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

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

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

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

$C = \frac{5}{9}\left(\frac{18}{1}\right)$

$C = \frac{5}{1}\left(\frac{2}{1}\right)$

$C = 10$

$C = 10$

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

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

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

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

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

$f(-3) = 30 - 10$

$f(-3) = 20$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

11

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

Primes 2, 3, 5, 7, ...

27	3
9	3
3	3
1	

8	2
4	2
2	2
1	

$27 = 3 \cdot 3 \cdot 3$, $8 = 2 \cdot 2 \cdot 2$

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

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

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

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

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

$\frac{x}{x} + \frac{4x \cdot x}{x} =$

$1 + 4x =$

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

$a^2+N+8b^2=(a+b)(a+8b)$

$=a^2+8ab+ab+8b^2$

$=a^2+8ab+1ab+8b^2$

$=a^2+9ab+8b^2$

12

$N=9ab$

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

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

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

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

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

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

36
$\times 5$
180

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

$A=LW$

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

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

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

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

$(2xy^8)^4 =$

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

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

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

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

13.

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

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

$1(ax-b) = b(4a-1)$ Cross Mult

$ax - b = 4ab - b$

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

$ax = 4ab$

$\frac{ax}{a} = \frac{4ab}{a}$

$x = 4b$

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

14.

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

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

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

(25.) Factor $\dfrac{9x^2}{16} - \dfrac{25y^2}{49}$ $\quad a^2 - b^2 = (a+b)(a-b)$

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

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

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

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

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

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

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

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

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

$x = -1$ OR $x = -2$

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

$(x+2)^2 = 9$

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

$x+2 = \pm 3$

$x+2 = -3$ OR $x+2 = 3$

$x+2-2 = -3-2$ OR $x+2-2 = 3-2$

$x = -5$ OR $x = 1$

15.

(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 $3x+2y = 5$

$4x+7y = 11$

$(3x+2y=5)(-7)$

$(4x+7y=11)(2)$ mult

$-21x-14y = -35$

$8x+14y = 22$

$-13x = -13$

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

$x = 1$

Subs

$3x+2y = 5$

$3(1)+2y = 5$

$3+2y = 5$

$3+2y-3 = 5-3$

$2y = 2$

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

$y = 1$

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