

TMT First 20 ACT Prep V3

1. Find the slope if given two points, (-2, 6)

and (4,8) [210] $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - 6}{4 - (-2)} = \frac{2}{6} = \frac{1}{3}$

2. Multiply $(x - 4)^2$ [211]

$(x-4)(x-4) = x^2 - 4x - 4x + 16$
 $x^2 - 8x + 16$

3. Solve $|x - 3| = 17$ [84]

$x - 3 = 17$
 $+3 +3$
 $x = 20$

$x - 3 = -17$
 $+3 +3$
 $x = -14$

4. Evaluate $f(x) = -3x^2 - x$ if $x = -1$

[110] $-3(-1)^2 - (-1)$
 $-3 \cdot 1 + 1$
 $-3 + 1 = -2$

5. Simplify $\frac{-3 \pm 3\sqrt{2}}{6}$ [214]

factor top $\frac{3(-1 \pm \sqrt{2})}{3 \cdot 2}$
 $\frac{-1 \pm \sqrt{2}}{2}$

6. Solve. Show 3+ steps of work [89]

$-2 - (2x - 1) = 3x + 9$
 $-2 - 2x + 1 = 3x + 9$
 $-2x - 1 = 3x + 9$
 $+2x +2x$
 $-1 = 5x + 9$
 $-9 -9$
 $-10 = 5x$
 $\frac{-10}{5} = \frac{5x}{5}$
 $x = -2$

7. Simplify $\frac{7x^2}{35x^8}$ [74]

$\frac{7 \cdot 1 \cdot x^2}{7 \cdot 5 \cdot x^2 \cdot x^6} = \frac{1}{5x^6}$

8. Simplify $\frac{2}{3} \cdot \frac{7}{3}$ [50]

$\frac{2}{3} \cdot \frac{7}{3} = \frac{14}{9}$

9. Factor out a GCF $2x^2 - 14x + 2ax$ [58]

$2x(x - 7 + a)$

10. Simplify $(3a^2b^4)^2 \cdot b^5$ [206]

$9a^4b^8 \cdot b^5 = 9a^4b^{13}$

11. Find the following: $8y = 16x - 8$ [135]

Slope: $\frac{2}{1}$
 Y-Intercept: $(0, -1)$
 $y = 2x - 1$

12. Solve $(3x + 1)(x - 9) = 0$ [85]

$3x + 1 = 0$ $x - 9 = 0$
 $3x = -1$ $+9 +9$
 $x = -\frac{1}{3}$ $x = 9$

13. Solve $-2n + 7 < -3$ [82]

$-2n + 7 < -3$
 $-7 -7$
 $-2n < -10$
 $\frac{-2n}{-2} < \frac{-10}{-2}$
 $n > 5$
 Divide by neg. switch sign

14. Simplify $\frac{4}{7} \cdot \frac{21}{8}$ [42]

$\frac{4 \cdot 1}{7 \cdot 1} \cdot \frac{7 \cdot 3}{4 \cdot 2} = \frac{3}{2} = 1\frac{1}{2}$ also

15. Solve $x^2 - 3x - 2 = 3$ [88]

$x^2 - 3x - 5 = 0$ cant factor so...
 $x = \frac{3 \pm \sqrt{9 - 4(1)(-5)}}{2 \cdot 1}$

16. Simplify $\frac{(x-7)(x+3)}{x^2 - 49}$ [209]

$\frac{(x-7)(x+3)}{(x-7)(x+7)}$
 $x = \frac{3 \pm \sqrt{9 + 20}}{2}$
 $x = \frac{3 \pm \sqrt{29}}{2}$

17. Simplify $\frac{2}{7} + \frac{5}{3}$ [39]

$\frac{3 \cdot 2}{3 \cdot 7} + \frac{5 \cdot 7}{3 \cdot 7} = \frac{6}{21} + \frac{35}{21} = \frac{41}{21} = 1\frac{20}{21}$ also

18. Multiply $(2x - 9)(x + 1)$ [60]

$2x^2 + 2x - 9x - 9$
 $2x^2 - 7x - 9$

19. Factor $x^2 - x - 6$ [53]

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

20. Simplify (PEMDAS) $2(5 - 2(x + 1))$ [212]

$2(5 - 2x - 2)$
 $2(-2x + 3)$
 $-4x + 6$