

A Solution to Review Test #2.

#1. $8 - 3x \geq 21$

$-3x \geq 13$

$3x \leq -13$

$x \leq -\frac{13}{3}$

#2. Given straightline $12x + 3y = 24 \Leftrightarrow 3y = -12x + 24$

$\Leftrightarrow y = -4x + 8$

Therefore we extract the slope "-4" because we are looking for the slope of a parallel line.

< slope: -4
point: (1, -2) $\Rightarrow y = -4(x-1) - 2$

$\Leftrightarrow y = -4x + 2$

#3. $(2x^2 - x - 3)(3x + 1) = 6x^3 - 3x^2 - 9x + 2x^2 - x - 3$

$= 6x^3 - x^2 - 10x - 3$

#4. $(-2a^{-2}b^3)^{-2}(4a^2b)^2 = (-2)^{-2}a^4b^{-6} \cdot 16 \cdot a^4b^2$

$= \frac{16a^8b^2}{(-2)^2b^6} = \frac{4a^8}{b^4}$

#5. 1.23×10^{-10}

#6. Note 195 is divisible by 13. $13 \times 15 = 195$.

$13x^2 + 26x - 195 = 13(x^2 + 2x - 15) = 13(x-3)(x+5)$

#7. $3x^2 - 7x = 2 \Leftrightarrow 3x^2 - 7x - 2 = 0$ $a=3, b=-7, c=-2$.

$x = \frac{7 \pm \sqrt{49 - 4 \cdot 3 \cdot (-2)}}{2 \cdot 3} = \frac{7 \pm \sqrt{49 + 24}}{6} = \frac{7 \pm \sqrt{73}}{6}$

#8. $\frac{x-6}{x^2+3x-18} + \frac{3}{x+6} = \frac{x-6}{(x+6)(x-3)} + \frac{3(x-3)}{(x+6)(x-3)} = \frac{4x-15}{(x+6)(x-3)}$

#9. $\frac{3x}{x^2+x-20} \div \frac{3x^6-9x^3}{x+5} = \frac{3x}{(x+5)(x-4)} \cdot \frac{x+5}{3x^3(x^3-3)} = \frac{1}{x^2(x-4)(x^3-3)}$

#10. $\frac{(\frac{1}{2} + \frac{1}{x}) \cdot 4x^2}{(\frac{4}{x^2} - \frac{1}{4}) \cdot 4x^2} = \frac{2x^2 + 4x}{16 - x^2} = \frac{2x(x+2)}{(4-x)(4+x)}$

#11. $4^{2x-1} = 64^{x-3}$

$\Leftrightarrow 4^{2x-1} = 4^{3x-9}$

$\Leftrightarrow 2x-1 = 3x-9$

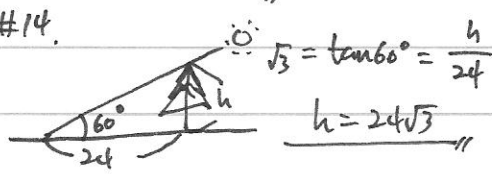
$\Leftrightarrow x = 8$

#13. Vertex formula $x = -\frac{b}{2a}$ with $a=-7, b=14$

$x = -\frac{14}{2(-7)} = 1$. For y-coordinate $y|_{x=1} = -7 + 14 + 2 = 9$.

Vertex: (1, 9)

#14.



#15. $\frac{\log_5 125}{\log_5 100000}$

$= \frac{\log_5 5^3}{\log_5 10^5} = \frac{3}{5}$

#12. $f(-2) = 4(-2) - (-2)^2 = -8 - 4 = -12$