PS1 Key PC. Fall 2018

(1) $\dfrac{5\frac{1}{3}}{3\frac{25}{27}} \quad \dfrac{\frac{16}{3}}{\frac{106}{27}} \quad \dfrac{\cancel{16}^{8}}{\cancel{3}_{1}} \cdot \dfrac{9}{\cancel{27}\ \cancel{106}_{53}}$ $\boxed{\dfrac{72}{53}}$

(2) $4[-5x+7-3(x+1)] = -5x+4$

$4[-5x+7-3x-3] = -5x+4$

$4[-8x+4] = -5x+4$

$-32x+16 = -5x+4$

$12 = 27x$

$\boxed{\frac{12}{27} = x}$

(3) $y = 2x + 4$

$3x + y = 29$

$y = 2(5) + 4$

$10 + 4$

$y = 14$

ck

$3x + 2x + 4 = 29$

$5x + 4 = 29$

$5x = 25$

$x = 5$

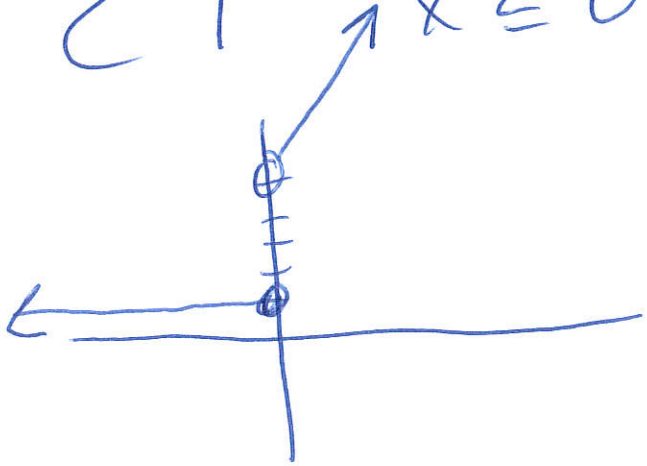
$\boxed{(5, 14)}$

$3(5) + 14 = 29$ ✓

(4) $f(0) = 0 - 9 \rightarrow \boxed{-9}$

$f(10) = 10 - 10 = \rightarrow \boxed{-2}$

(5) $\begin{cases} x + 5 & x > 0 \\ 1 & x \leq 0 \end{cases}$



(6) $\frac{\text{New} - \text{old}}{\text{old}} \times 100$

$\frac{645 - 500}{500} \times 100 \rightarrow \frac{145}{500} \times 100$

29% increase

(7) $f(x) = \frac{\sqrt{x-6}}{x+9}$

$x - 6 \geq 0$

$x \geq 6$

$[6, \infty)$ ↑ not including

↳ $x + 9 = 0$

$x \neq -9$ $(-\infty, -9) \cup (-9, \infty)$

So domain is $[6, \infty)$

(8) $f(x) = \begin{cases} -4 \text{ on } [-6, -2] \\ 5 \text{ on } (-2, 1] \\ -3 \text{ on } (1, 5] \end{cases}$

(9) $9x^2 - 39x - 30$

GCF of 3

$3(3x^2 - 13x - 10)$

$3(3x + 2)(x - 10)$

$\boxed{3(3x+2)(x-5)}$

(10) $x^3 - 8$ $(a-b)(a^2+ab+b^2)$

$a = x$

$b = 2$ $(x-2)(x^2+2x+4)$