Put your name here: Key Period:____

AP Calculus AB: 1.1 Algebra 1 Review

Find the equation, in slope-intercept form, of the line formed by two points.

1) $(-4,-8),(2,7)$ (x_1, y_1 x_2, y_2)

$m = \frac{y_2-y_1}{x_2-x_1} = \frac{7-(-8)}{2-(-4)} = \frac{15}{6} = \frac{5}{2}$

$(y-y_1) = m(x-x_1)$

$y-(-8) = \frac{5}{2}(x-(-4))$

$y+8 = \frac{5}{2}x+10 \Rightarrow \boxed{y = \frac{5}{2}x+2}$

2) $(-3,\frac{-3}{2}),(4,-5)$

$m = \frac{-5-(-\frac{3}{2})}{4-(-3)} = \frac{-\frac{7}{2}}{\frac{7}{1}} = -\frac{7}{14} = -\frac{1}{2}$

$y-(-5) = -\frac{1}{2}(x-4)$

$y+5 = -\frac{1}{2}x+2$

$\boxed{y = -\frac{1}{2}x-3}$

3) $(5,\frac{8}{3}),(0,6)$

$m = \frac{\frac{8}{3}-6}{5-0} = \frac{-\frac{10}{3}}{\frac{5}{1}} = -\frac{10}{15} = -\frac{2}{3}$

$y-6 = -\frac{2}{3}(x-0)$

$y-6 = -\frac{2}{3}x$

$\boxed{y = -\frac{2}{3}x+6}$

Solve for the missing variables.

4) $10(x+5)-20x = 5x-(2x+28)$

$10x+50-20x = 5x-2x-28$

$-10x+50 = 3x-28$

$78 = 13x$

$\boxed{x=6}$

5) $x^2+4x-10 = 2x+5$

$x^2+2x-15 = 0$

$(x-3)(x+5) = 0$

$\boxed{x=3}$ $\boxed{x=-5}$

6) $2(x^2+3x) = -x+15$

$2x^2+6x = -x+15$

$2x^2+7x-15 = 0$

$(x+5)(2x-3) = 0$

$\boxed{x=-5}$ $\boxed{x=\frac{3}{2}}$

7) $\frac{\ln(x)+6}{2} = 3$

$\ln(x)+6 = 6$

$\ln(x) = 0$

$e^{\ln(x)} = e^0$

$\boxed{x = e^0 = 1}$

8) $\frac{e^x+5}{2} = 3$

$e^x+5 = 6$

$\ln(e)^x = \ln(1)$

$\boxed{x = \ln(1) = 0}$

9) $\ln(5x) = 0$

$e^{\ln(5x)} = e^0$

$5x = e^0 = 1$

$\boxed{x = \frac{1}{5}}$

10) $e^{2x+4} = 1$

$\ln(e^{2x+4}) = \ln(1)$

$2x+4 = 0$

$2x = -4$

$\boxed{x=-2}$

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Simplify each of the following equations

11) $\frac{x^2-4x-12}{x^2+7x+10} = \frac{(x-6)(x+2)}{(x+2)(x+5)}$

$\frac{x-6}{x+5}$

12) $\frac{3x^2+2x-21}{2x^2+11x+15} = \frac{(3x-7)(x+3)}{(2x+5)(x+3)} =$

$\frac{3x-7}{2x+5}$

13) $\frac{x^2-4}{2x^2+8x+8} = \frac{(x+2)(x-2)}{2(x^2+4x+4)}$

$= \frac{(x+2)(x-2)}{2(x+2)(x+2)} = \frac{x-2}{2(x+2)}$

14) $\frac{x^4-16}{(x^2+4)(2x^2-x-10)} = \frac{(x^2-4)(x^2+4)}{(x^2+4)(x+2)(2x-5)}$

$\frac{x^2-4}{(x+2)(2x-5)} = \frac{(x+2)(x-2)}{(x+2)(2x-5)} = \frac{x-2}{2x-5}$

Simplify each of the following polynomial equations

15) $\frac{21k^3k^4}{7k^2} = \frac{3k^7}{k^2} = 3k^5$

16) $\frac{(p^3)^{-2}k^2}{3p^{-2}} = \frac{p^{-6}k^2}{3p^{-2}} = \frac{p^2k^2}{3p^6} = \frac{k^2}{3p^4}$

17) $\frac{3(2xy^3)^3}{4x^{-2}y^6} = \frac{3(8x^3y^9)}{4x^{-2}y^6}$

$\frac{6x^3y^9x^2}{y^6} = 6x^5y^3$

18) $\frac{4xyz}{2x^{-1}} = \frac{2xyz}{x^{-1}} = 2x^2yz$