Six Weeks Test Review

① $6^{x+1} = 36^{5x/2}$

$6^{x+1} = (6^2)^{5x/2}$

$x+1 = 2(5x/2)$

$x+1 = 5x$

$\boxed{x = 1/4}$

② $81^{x+5} = 3^{2x/3}$

$3^{4(x+5)} = 3^{2x/3}$

$3 \cdot 4(x+5) = 2x/3 \cdot 3$

$12(x+5) = 2x$

$12x + 60 = 2x$

$\boxed{x = -6}$

③ $\log_3(x+1) = 2$

$3^2 = x+1$

$9 = x+1$

$\boxed{x = 8}$

④ $\log(2x) = 2 - \log(5)$

$\log(2x) + \log(5) = 2$

$\log(2x \cdot 5) = 2$

$10^2 = 10x$

$\boxed{x = 10}$

⑤ $\ln(x+4) = 3$

$e^3 = x+4$

$e^3 - 4 = 0$

$\boxed{x \approx 16.086}$

⑥ $\ln(x) - \ln(3) = 5$

$\ln(x/3) = 5$

$e^5 = x/3$

$3e^5 = x$

$\boxed{x \approx 445.239}$

⑦ $\log(\frac{x}{2}) + \log(2) = 4$

$\log(\frac{x}{2} \cdot 2) = 4$

$\log(x) = 4$

$10^4 = x$

$\boxed{x = 10{,}000}$

⑧ $A = Pe^{rt}$

$= 2300e^{(.06)(4)}$

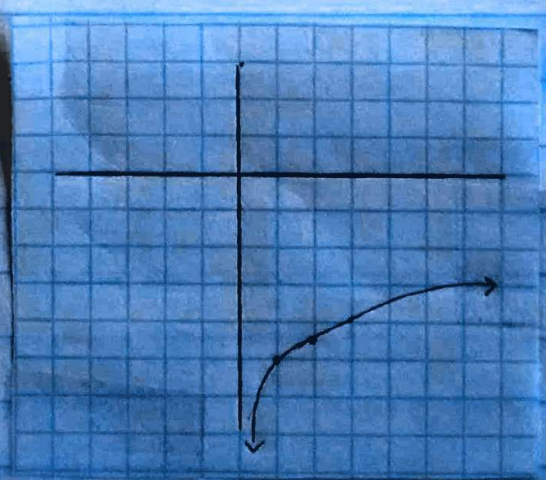
$\boxed{A = \$2923.87}$

⑨ $y = a(.5)^x$

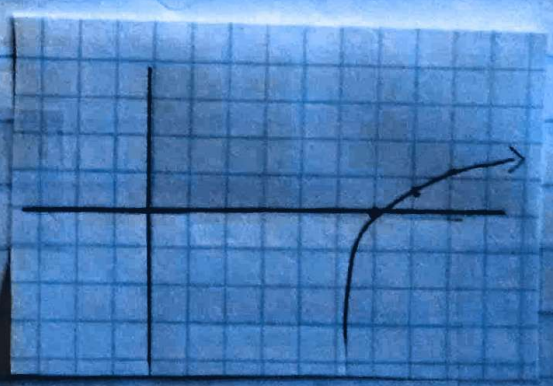
$= 30(.5)^{45/30}$

$\boxed{y = 10.61 \text{ oz}}$

⑩



⑪



(12) $y = kx$

$12 = k(3)$

$k = 4$

$\boxed{y = 4x}$

(13) $y = k/x$

$7 = k/2$

$k = 14$

$\boxed{y = 14/x}$

(14)

$k = y/x$	x	y	$k = y \cdot x$
$2/8 = 8/4 = 1/4$	8	2	$8 \cdot 2 = 16$
$16/1 = 16$	1	16	$1 \cdot 16 = 16$
$4/4 = 1$	4	4	$4 \cdot 4 = 16$

X — Inverse

(15)

	x	y	
$8/1 = 8$	1	8	$8 \cdot 1 = 8$
$4/2 = 2$	2	4	$2 \cdot 4 = 8$
$2/3 = 2/3$	3	2	$2 \cdot 3 = 6$

X — neither — X

(16)

	x	X
$18/9 = 2$	18	9
$6/3 = 2$	6	3
$10/5 = 2$	10	5

direct

(17) $y = kx$

$C = kT$

$5 = k60$

$k = 1/12$

$C = 1/12 \cdot T$

$C = 1/12(300)$

$\boxed{C = \$25}$

(18) $y = k/x$

$N = k/F$

$4 = k/10$

$k = 40$

$N = 40/F$

$2 = 40/F$

$2F = 40$

$\boxed{F = 20}$

(19) $\dfrac{2x^5 - 18x^3}{x^3 + 7x^2 + 12}$

$x(x+4)(x+3)$

$\boxed{x = 0, -4, -3}$

(20) $\dfrac{2x^3(x^2-9)}{x(x+4)(x+3)}$

$\dfrac{2x^{\cancel{3}2}(x-3)\cancel{(x+3)}}{x(x+4)\cancel{(x+3)}}$

$\boxed{\dfrac{2x^2(x-3)}{x+4}}$

(21) $\dfrac{4x^2y}{3x^5y^2} \cdot \dfrac{9x^7y^4}{2xy^6}$

$\boxed{\dfrac{6x^3}{y^3}}$

(23) $\dfrac{x^2-81}{x^2+5x+4} \div \dfrac{x^2-10x+9}{x^3-x}$

$\dfrac{\cancel{(x-9)}(x+9)}{\cancel{(x+1)}(x+4)} \cdot \dfrac{x\cancel{(x-1)}\cancel{(x+1)}}{\cancel{(x-9)}\cancel{(x-1)}}$

$\boxed{\dfrac{x(x+9)}{x+4}}$

(24) $\dfrac{x+1}{x-4}$

LCD: $(x-2)(x+2)$

(23) $\frac{x+1}{x^2-4} - \frac{3}{x+2}$

$\frac{x+1}{(x-2)(x+2)} - \frac{3(x-2)}{(x+2)(x-2)}$

$\frac{x+1-3(x-2)}{(x-2)(x+2)}$

$x+1-3x+6$

$\boxed{\frac{-2x+7}{(x-2)(x+2)}}$

LCD: $(x-7)(x+1)$

(24) $\frac{x-2}{x^2-6x-7} + \frac{2x+1}{x+1}$

$\frac{x-2}{(x-7)(x+1)} + \frac{2x+1}{x+1}\frac{(x-7)}{(x-7)}$

$x-2+(2x+1)(x-7)$

$x-2+2x^2-13x-7$

$\boxed{\frac{2x^2-12x-9}{(x-7)(x+1)}}$

(25) $f(x) = \frac{x^2-5x+4}{2x^2-8x}$

(25) $\frac{(x-1)(x-4)}{2x(x-4)}$

hole @ $x=4$

$\frac{4-1}{2(4)} = \frac{3}{8}$

hole @ $\boxed{(4, 3/8)}$

(26) Deg N = Deg D

$\boxed{y = 1/2}$

(27) $\boxed{x=0}$

(28) $x-1=0$

$x=1$

$\boxed{(1,0)}$

LCD: $8(n-6)$

(29) $\frac{8(n-6)}{8}\frac{3}{} = \frac{n-1}{n-6}\frac{8(n-6)}{}$

$3(n-6) = 8(n-1)$

$3n-18 = 8n-8$

$-10 = 5n$

$\boxed{n=-2}$

LCD: $x-1$

(30) $(x-1)\frac{x}{1} + \frac{-8(x-1)}{x-1} = 3(x-1)$

$x(x-1)-8 = 3(x-1)$

$x^2-x-8 = 3x-3$

$x^2-4x-5=0$

$(x-5)(x+1)=0$

$\boxed{x=5,-1}$

(31) $\sqrt[3]{\frac{27x^9y^4}{64}}$

$\frac{27^{1/3}x^{9/3}y^{4/3}}{64^{1/3}}$

$\boxed{\frac{3x^3y\sqrt{y}}{8}}$

(32) $\sqrt{\frac{16x^7y^2}{64z^4}}$

$\frac{16^{1/2}x^{7/2}y^{2/2}}{64^{1/2}z^{4/2}}$

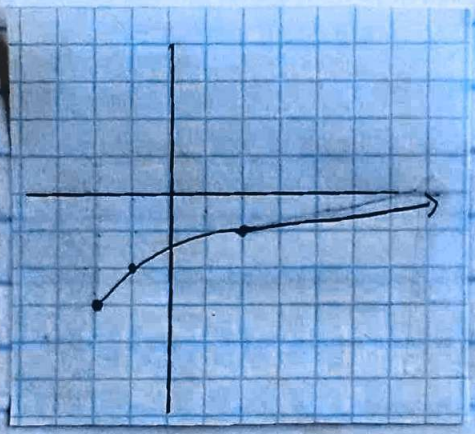
$\frac{4x^3y\sqrt{x}}{8z^2}$

$\boxed{\frac{x^3y\sqrt{x}}{2z^2}}$

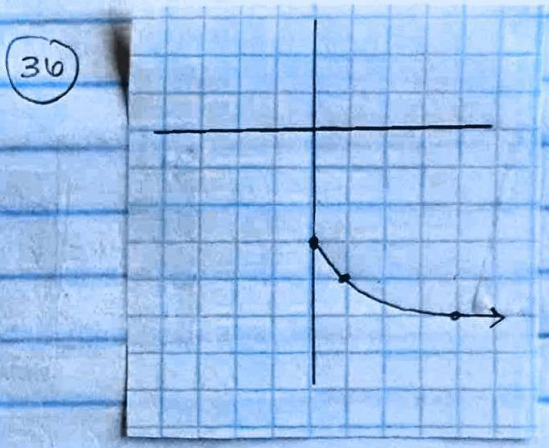
(33) $256^{1/4} = \boxed{4}$

(34) $27^{2/3} = \boxed{9}$

(35)



(36)



(37) $\left(\sqrt[3]{2x-1}\right)^3 = (-3)^3$

$2x - 1 = -27$

$2x = -26$

$\boxed{x = -13}$

(38) $\left(\sqrt{x+30}\right)^2 = x^2$

$x + 30 = x^2$

$0 = x^2 - x - 30$

$(x-6)(x+5)$

$\boxed{x = 6, -5}$