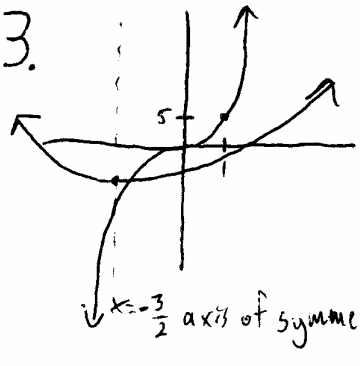
1. C commutative means you can change the order.

2. $m = \frac{-a}{b} = \frac{-\frac{5}{2}}{\frac{7}{2}} = -\frac{5}{7}$ C

3. 

1 point of intersection B

4. $f(g(x)) = (5x+2)^2 - 3(5x+2) = 25x^2 + 20x + 4 - 15x - 6$
$= 25x^2 + 5x - 2$
$g(f(x)) = 5(x^2-3x)+2 = 5x^2 - 15x + 2$
$20x^2 + 20x - 4$ B

5. $\sqrt{5^2+3^2} = \sqrt{25+9} = \sqrt{34}$ B

6. $5x+1 = 3x+2$
$2x = 1$
$x = \frac{1}{2} \Rightarrow y = \frac{7}{2}$ D

7. This is an up-pointing parabola with vertex $(5,-1) \Rightarrow$ III C

8. $y = x^2$ $y^2 - 17y + 16 = 0$
$(y-16)(y-1) = 0$
$y = 16$ $y = 1$
$x = \pm 4$ $y = \pm 1$ C

9. $1C = \frac{3}{5}B = 3Y = 6W$ C

10. $t + u = 10$
$10(u+2) + (t-2) = 10t + u - 36$
$10u + t + 18 = 10t + u - 36$
$-9t + 9u = -54$
$u - t = 6$
$2t = 16 \Rightarrow t = 8 \Rightarrow u = 2$ C

11. $2D = 3(G+B) \rightarrow 2D - 3G - 3B = 0$
$2G + \frac{1}{2}B = D \rightarrow D - 2G - \frac{1}{2}B = 0$
$D = G + 2B + 1$ $D - G - 2B = 1$
$1 - 2 - 3 \Rightarrow -\frac{1}{2}B = -1 \Rightarrow B = 2$
$D - G = 5$
$D - 2G = 1$ $\Rightarrow -G = -4 \Rightarrow D = 9$
$\Rightarrow 15$ C

12. I. ✓ if V & n are constant, T must increase.
II. ✓ n & T
III. ✗ V & T, n must increase V must decrease C

13. $m_1 = \frac{-a}{b} = -\frac{5}{3}$

$m_\perp = \frac{-1}{m_1} = \frac{3}{5}$ B

14. $x^2 + \frac{5}{2}x - \frac{3}{2} = 0$

$(x - r_1)(x - r_2) = 0$

$\Rightarrow -\frac{3}{2} = r_1 r_2$ D

15. $\frac{(x+1)(x^2-2x-8)}{(x+1)(x^2+x-12)} = \frac{(x-4)(x+2)}{(x+4)(x-3)}$ B

16. $a = 1.00 + .04 \cdot 20 = 1.80$

$b = .05 \cdot 20 = 1.00$

$c = .03 \cdot 10 + .06 \cdot 10 = .90$

$1.80 - .90 = .90$ A

17. $\left(\frac{1}{2} + \frac{2}{3}\right)t = 500$

$t = 500 \cdot \frac{6}{7} \approx 428.57$ A

18. $a = 4x,\ b = 5x$

$y = \frac{8x+5x}{2} = \frac{13}{2}x$

$x = 2,\ y = 13,\ a = 8,\ b = 10$ A

19. $21 \& 18 \Rightarrow 3$ A

20. $\frac{(x-y)(x^2+xy+y^2)}{(x-y)(x+y)6} = 5$

$x^2 + xy + y^2 = (x+y)^2 - xy = 30$

$36 - xy = 30$

$xy = 6$

$x - y = 0$

$x + y = 6 \Rightarrow x + y = 3$

$xy = 9$ E

21. $490x + 70(186 - x) = 31080$ /7

$7x + 186 - x = 444$

$6x = 258$

$x = 43$ A

22. $70 < 100\left(\frac{20-n}{20}\right)^n$

$n = 1 \Rightarrow .95^1 = .95$

$n = 2 \Rightarrow .9^2 = .81$ B

$n = 3 \Rightarrow .85^3 = .61$ X

23. $r^x r^p = r^{x+p}$ A

24. $AB = 8 + 6 + 12i - 4i = 14 + 8i$

$A + B = \frac{6+i}{8+7i}$ A

25. $\frac{27}{10} \overline{m} \frac{41}{10} + \frac{32}{10} = \frac{18}{10} = \frac{9}{5}$ A

26. $.04x + .05(6000-x) = 340$

$-.01x = -60$

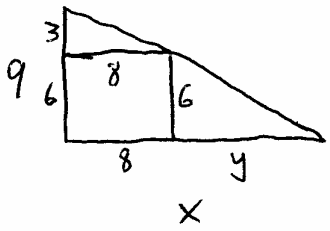
$x = 6000$ A

27. $\times 12 \Rightarrow 3x+9+24 = 18-8x+4$

$11x = -11$

$x = -1$ A

28.



Similar $\triangle$s $\Rightarrow \frac{3}{8} = \frac{6}{y} \Rightarrow y = 16$

$x = 24$ C

29. $y^{17} z^2 4\sqrt{13xz}$ A

just pull out squares until there aren't any more

30. directly proportional $\Rightarrow$ k in numerator

inversely $\Rightarrow$ h in denominator D

31. $(w+5)(w+1) = (w+3)w + 26$

$w^2+6w+5 = w^2+3w+26$

$3w = 20 \Rightarrow w = 7$ C

32. I like to mark my way down the polynomial

$(x-3)(x^4-2x^3+5x^2-8x+1)$ B

necessary to get $1x^5$ but also makes $-3x^4$

makes the other $-2x^4$ to get $-5x^4$ also makes $6x^3$

this term needs to make the x & constant terms work.

33. We end up with 3 $2x$'s & 3 -5's, and there are $\binom{6}{3}$ ways to pick them.

$\binom{6}{3}(2x)^3(-5)^3 = 20 \cdot 8x^3 \cdot -125$

$= -20000x^3$ E

34. 3, 11, 27, 51

+8 +16 +24 $\Rightarrow$ arithmetic $\Rightarrow$ quadratic

C works

35. 7.4 is a bit less than 15, so A is a good guess.

$12 \cdot .15 + x \cdot 0 = (12+x)(.074)$

$.912 = .074x$

$12.\overline{324} = x$ A

36. new drain time $= \frac{2 \cdot 3}{4}$

new fill time $= 2 - 4 = 8$

$8 + \frac{3}{2} = \frac{19}{2}$ C

37. B can't be 9.

$B = 8 \Rightarrow A = 1$ & $D = 9$

$B + C = 14 \Leftarrow C = 6 \Leftarrow F = 7$

carries XX

$B = 7 \Rightarrow A = 1$ & $D = 9$ (assume carry)

$E = 2 \Leftarrow C = 5 \Leftarrow F = 6$ B

38. slopes $= \pm 1$

meet at $(-9, 0)$

$y \geq +\text{slope}$

$y < -\text{slope}$ $\Rightarrow$ C

39. $\frac{50 + x}{317 + x} \geq \frac{1}{4}$

$200 + 4x \geq 317 + x$

$3x \geq 117$

$x \geq 39$ B

40. the abscissa is the x-value of an ordered pair.

$\Rightarrow 73.2$ D