

1. 5/108 216 possible sums
 1, 1, 1 one way
 1, 1, 2 three ways
 1, 1, 3 three ways
 1, 2, 2 three ways
 So we have 10/216

2. 240 $A = 60$, $B = 181$, and $C = 185$

3. 262,201
 The sum of the terms in the n th row is 2^{n-1} . So we have $2^{18} + (19)(+3)$

4. -4 The third root is $1 - i$.
 $B = -[4 + 1 - i + 1 + i] = -6$
 $D = -[(4)(1 - i)(1 + i)] = -8$
 To find C let $x = 4$: $64 - 6(16) + 4C - 8 = 0$
 $C = 10$

5. 1999 $(a + b + c)^2 = 45^2$
 $a^2 + b^2 + c^2 + 2ab + 2bc + 2ac = 2025$
 $a^2 + b^2 + c^2 + 26 = 2025$
 $a^2 + b^2 + c^2 = 1999$

6. $2x - 9y = -13$
 The slope of the given line is $-9/2$.
 $\frac{y - 1}{x + 2} = \frac{2}{9}$

7. 9
 Square both sides.
 $n + 40i + 2\sqrt{n^2 + 1600} + n - 40i = 100$
 $\sqrt{n^2 + 1600} = 50 - n$
 $1600 = 2500 - 100n$

8. 5 30 is the first number such that $30!$ ends with seven zeros. 30 contains 6 fives and 1 twenty-five.
 35 is the first number such that $35!$ ends with 8 zeros.
 N can be 30, 31, 32, 33, or 34

9. 23 $f(g(h(1))) = f(g(2)) = f(-2) = 4$
 $f(g(h(2))) = f(g(9)) = f(\sqrt{6}) = \sqrt{6}$
 $h(g(f(0))) = h(g(0)) = h(0) = 1$
 $16 + 6 + 1 = 23$

10. 0.66 $\frac{20}{12} = x^{-5/4}$
 $\frac{3}{5} = x^{5/4}$
 $\left(\frac{3}{5}\right)^{4/5} = x$

11. 2 (2,0) is a point on the first line.

$$d = \frac{|10 + 16|}{13}$$

12. 6 Expand:

$$[(b+c)(c+a)(a+b)+abc+abc] -$$

$$[ac(c+a)+bc(b+c)+ab(a+b)] = 24$$

Multiply and combine like terms

$$4abc = 24$$

13. $2 < x < 4$

$$x^2 + 2x + 1 > 5x - 1$$

$$(x-2)(x-1) > 0; \quad x < 1 \text{ or } x > 2$$

AND

$$x^2 + 2x + 1 < 7x - 3$$

$$(x-1)(x-4) < 0; \quad 1 < x < 4$$

14. 5.24

This is simply a calculator exercise

$$15. \frac{3}{7} \binom{15}{6} x^9 y^6 = \frac{1}{3} \binom{15}{7} x^8 y^7$$

$$\frac{x}{y} = \frac{7!8!}{15!} (3)$$