1. $A = \frac{(3+2i)(2-3i)}{(2+3i)(2-3i)} = \frac{12-5i}{13}$; $B = \frac{(4+3i)(3-4i)}{(3+4i)(3-4i)} = \frac{24-7i}{25}$. $\frac{2m}{p} = 2(\frac{12}{13})(\frac{25}{24}) = \frac{25}{13}$; $nq = (-\frac{5}{13})(-\frac{7}{25}) = \frac{7}{65}$; sum $\frac{5(25)+7}{65} = \boxed{\frac{132}{65}}$.

2. $A = 4!; B = \frac{7!}{2!}; C = \frac{6!}{3!2!}; D = 5! \to \frac{D}{A} = \frac{5!}{4!} = 5$ and $\frac{B}{C} = \frac{7!3!2!}{2!6!} = 7(3!) = 42$; sum $\boxed{47}$.

3. The first statement is false. If we had, say, $\log(y) = 2\log(x)$ then we'd have $\log(y) = \log(x^2)$ and so y would be a quadratic function of x. The second statement is true, since the determinant is nonzero. The third statement is true, since $f(-a) = -2a = -f(a)$ for all a. The fourth statement is true; if a polynomial has real coefficients, then if any complex number is a root its conjugate must also be a root. Hence roots come in pairs, and so we have at least one real root (since there's an odd number of roots). The fifth statement is true; if one was zero, the other would be undefined (and therefore not real). Hence $T = 11, F = 2; TF = \boxed{22}$.

4. After two minutes I've eaten $\frac{1}{3} + \frac{1}{4} = \frac{7}{12}$; after three minutes I've eaten $\frac{7}{12} + \frac{1}{5} = \frac{47}{60}$; after four minutes, I've eaten $\frac{47}{60} + \frac{1}{6} = \frac{57}{60} = \frac{19}{20}$. I thus need to eat $\frac{1}{20}$ of the original pizza; since it'll be in a minute where I can eat $\frac{1}{7}$ of the pizza per minute, it'll take me $\frac{\frac{1}{20}}{\frac{1}{7}} = \frac{7}{20}$ of the minute to eat it. Hence, it takes me a total of $4 + \frac{7}{20} = \boxed{\frac{87}{20}}$ minutes.

5. 3-game case: probability is $(\frac{1}{3})^3 = \frac{1}{27}$ since they must lose all 3 games.
4-game case: probability is $\binom{3}{1}(\frac{1}{3})^3(\frac{2}{3}) = \frac{2}{27}$. Note that it's $\binom{3}{1}$ rather than $\binom{4}{1}$ because the Cavaliers can only win one of the first three games; if they don't win one of those, then they'll be gone in three games rather than four.
5-game case: probability is $\binom{4}{2}(\frac{1}{3})^3(\frac{2}{3})^2 = 6 \times \frac{4}{243} = \frac{8}{81}$. Sum of the probabilities is $\boxed{\frac{17}{81}}$.

6. $A = -\frac{d}{a} = -6$. $-6x + 37 = 13 + 6x \to 12x = 24 \to x = 2 \to B = (2, 25)$.
$y - 25 = 3(x-2) \to y = 3x + 19$ is C; hence, D is $\boxed{19}$.

7. The probability that my number equals your number is $\frac{1}{10}$. Since the probabilities are symmetric, half of the remaining time my number will be greater than yours and half of the remaining time my number will be less than yours. Thus, the probability is $\frac{1}{2}(1 - \frac{1}{10}) = \boxed{\frac{9}{20}}$.

8. $A = 3$ ($x = 2, x = 4$, and by drawing the graphs we see that there is also a negative solution)
$\log_2(x+1) = \log_8((x+1)^3); 2\log_4(x) = \log_8(x^3)$; hence, we get
$\log_8((x^2+x)^3) = \log_8(3x)^3 \to x^2 + x = 3x \to x^2 - 2x = 0 \to x = 2$; $B = 2$.
Let $t = 2^y$. Then $t^2 - 4t = 12 \to t^2 - 4t - 12 = (t-6)(t+2) = 0$; 6 is the only solution that works and so $C = \log_2(6)$. $AB + 2^C = \boxed{12}$.

9. A: $.05n + .1(37-n) = 2.25 \to 3.7 - 0.05n = 2.25 \to n = 29$
B: $.05(37-d) + .1d = 3 \to 1.85 + .05d = 3 \to d = 23$
C: $1.85 + .05d = 2.65 \to d = 16$
D: $3.7 - 0.05n = 2.4 \to n = 26$
$29 + 23 + 16 + 26 = \boxed{94}$.

10. A: Since $13^2 = 169$ and $9^2 = 81$, we have $x < 169, y < 81$. Hence, $[x+y] < 250$; max possible value is 249 (i.e. if $x = 168.9, y = 80.9$)
B: $2^6 \leq w < 2^7; 2^5 \leq z < 2^6$; hence, $w + z < 2^6 + 2^7 = 192$; max possible value of $[w+z]$ is 191.
$A + B = 249 + 191 = \boxed{440}$.

11. Let $O = 1 + \frac{1}{3^2} + \frac{1}{5^2} + ...$ and let $E = \frac{1}{2^2} + \frac{1}{4^2} + \frac{1}{6^2} + ...$ Then we can rewrite $E = \frac{1}{4(1^2)} + \frac{1}{4(2^2)} + ... = \frac{1}{4}(\frac{\pi^2}{6}) = \frac{\pi^2}{24}$. Hence, since $O + E = \frac{\pi^2}{6}$, we have $O = \frac{\pi^2}{8}$. We can write $\sum_{k=1}^{\infty} \frac{(-1)^{k+1}}{k^2}$ as $O - E = \boxed{\frac{\pi^2}{12}}$.

12. Play around with it a bit. If both players play perfectly, the second player can always block the first player's victory (and vice versa); hence, the answer is $\boxed{\text{draw}}$.

13. I brush on days $3, 6, 12, 15, ..., 363$ and shower on days $9, 18, 27, ...360$. Hence, I brush on $\frac{363}{3} - \frac{360}{9} = 81$ days and shower on $\frac{360}{9} = 40$ days; $\frac{B}{A} = \boxed{\frac{40}{81}}$.

14. $410 = 10 \times 41 = 2 \times 5 \times 41 \to A = 41$; $420 = 10 \times 42\ 2 \times 5 \times 2 \times 3 \times 7 \to B = 7$;

$430 = 10 \times 43\ 2 \times 5 \times 43 \rightarrow C = 43$; $440 = 10 \times 44\ 2 \times 5 \times 2^2 \times 11 \rightarrow D = 11$. The distance from $(7, 41)$ to $(11, 43)$ is $\sqrt{4^2 + 2^2} = \boxed{2\sqrt{5}}$.

15. Plug in $(0, -6)$ to get $C = -6$; plug in $(-3, 3)$ to get $9A - 3B - 6 = 3$ and plug in $(2, 8)$ to get $4A + 2B = -6 = 8$. Hence $9A - 3B = 9, 4A + 2B = 14 \rightarrow 3A - B = 3, 2A + B = 7$ $\rightarrow 5A = 10 \rightarrow A = 2, B = 3$; $B^{A+C} = 3^{2-6} = \boxed{\frac{1}{81}}$.