1. **Answer:** $\frac{1}{3}$

If $g$ is the fraction of the class that are girls and $b$ is the fraction of the class that are boys, then $91g + 85b = 89$ and $g + b = 1$, so $91(1 - b) + 85b = 89$, which simplifies to $b = \frac{1}{3}$.

2. **Answer:** $1$

\[
(x^2 + 4)^2 = (2x - 3)^2
\]
\[
(x^2 + 4)^2 - (2x - 3)^2 = 0
\]
\[
(x^2 + 4 + 2x - 3)(x^2 + 4 - 2x + 3) = 0
\]
\[
(x^2 + 2x + 1)(x^2 - 2x + 7) = 0
\]
\[
(x + 1)^2(x^2 - 2x + 7) = 0
\]

$x^2 - 2x + 7$ has no real roots since $2^2 - 4 \cdot 7 < 0$.

3. **Answer:** $m^2$

A lillypad will be off if an even number of frogs jump on it. Hence, the $m^{th}$ lillypad will be on if $m$ has an odd number of factors. $m$ has an odd number of factors $\iff m$ is a perfect square.

4. **Answer:** $\{(2, 4), (4, 2)\}$

\[
\log A \cdot \log B = \frac{A}{B}
\]
\[
B \log A = A \log B
\]
\[
\log A^B = \log B^A
\]
\[
A^B = B^A
\]

$(A, B) \in \{(2, 4), (4, 2)\}$

5. **Answer:** $17$

\[
f(0) = f(-8+8)
\]
\[
= f(-8) + g(8) + 8
\]
\[
= -8 + 17 + 8
\]
\[
= 17
\]

6. **Answer:** $2005$

$x = 2$ so 

\[
(x^2 + 1)\left(\left((x^2 + 1) \cdot x^2 \right)^2 + 1\right) = 2005.
\]

7. **Answer:** $3$

The roots are $n$, $n + 1$, and $n + 2$. Then $a^2 = ((n) + (n + 1) + (n + 2))^2 = (3n + 3)^2 = 9(n + 1)^2$. $b + 1 = n(n + 1) + n(n + 2) + (n + 1)(n + 2) + 1 = 3n^2 + 6n + 3 = 3(n + 1)^2$. So $\frac{x^2}{b+1} = 3$. 

1
8. **Answer:** \(a = 4, b = 3\)

Since \(24ab32\) is divisible by 9,

\[
2 + 4 + a + b + 3 + 2 \equiv 0 \pmod{9}
\]

\[
a + b \equiv -2 \pmod{9}
\]

So we have either \(a + b = 7\) or \(a + b = 16\)

Since \(24ab32\) is divisible by 11,

\[
-2 + 4 - a + b - 3 + 2 \equiv 0 \pmod{11}
\]

\[
a - b \equiv 1 \pmod{11}
\]

So \(a - b = 1\). Hence, the only solution is \(a = 4, b = 3\).

9. **Answer:** 12

Let \(a, b, c\) be the roots of \(x^3 + Ax^2 + Bx + C = 0\).

\[
A = -(a + b + c) = 1.
\]

\[
B = ab + bc + ac = \frac{1}{2}[(a+b+c)^2 - (a^2 + b^2 + c^2)] = \frac{1}{2}[1 - 17] = -8
\]

Therefore:

\[
a^3 + Aa^2 + Ba + C = 0
\]

\[
b^3 + Ab^2 + Bb + C = 0
\]

\[
c^3 + Ac^2 + Bc + C = 0
\]

Add them up to get:

\[
11 + A(17) + B(-1) + C = 0
\]

\[
11 + 17 + 8 + 3C = 0
\]

\[
C = \frac{-36}{3} = -12
\]

\[
C = -abc.
\]

Thus,

\[
abc = 12.
\]

Alternatively, solve to get

\[
a = b = -2, \ c = 3.
\]

10. **Answer:** \(x^4 - 14x^2 + 9\)

Let \(x = \sqrt{2} + \sqrt{5}\).

Then \(x^2 = 2\sqrt{10} + 7\)

\(x^4 = 89 + 28\sqrt{10}\)

\(x^4 - 14x^2 = -9\)

so if \(p(x) = x^4 - 14x^2 + 9\), then \(p(\sqrt{2} + \sqrt{5}) = 0\).

\(p(x)\) must be of at least degree 4 since \(\sqrt{2} + \sqrt{5}\) is not the root of any quadratic or cubic polynomials with integer coefficients.