1. **A**.
2. **B.** Setting the two functions equal, we get **3** is the only integer solution.
3. **A.** By rearranging the equation in order of ascending instead of descending power, the sum of the reciprocal of the roots can easily be found with -b/a, yielding 1/1=**1**.
4. **B**. The domain must satisfy and , so it must be and and . This gives  as our answer.
5. **D.** We call , so . Squaring both sides, , and substituting 5 for y, we get .
6. **C**. .
7. **B**.

.

2 gives the highest value of p(x)

1. **B**. Notice that the sum of the values of (𝑥), (𝑥), and ℎ(𝑥) for is . Therefore, .
2. **C**. We know that and due to symmetry, so
3. **C.** . .
4. **A**. To find the sum of the coefficients, simply replace 1 for x: .
5. **D**. Using the points, the equation is , so
6. **D**. Joy’s equation factors to while Jade’s equation factors to , so the sum is
7. **D**. First find the inverse of the function: . . Then plugging it back in for x:
8. **B**. This function is equivalent to . Then .
9. **C**. An even function has the property while an odd one has the property Option A is even, option B is odd, option C () is neither, option D () is even.
10. **B**. The other roots of are 2 + 𝑖, 𝑖, and 1 + 𝑖. 𝑎 is the leading coefficient.

**18.** **E**. (2∎3) ∎ (5∎2)

**19. A**. . .

**20. E.** Working backwards, we know that , and we’re given , so . and , so

**21. E.** By Descartes’ Rule of Signs, w has either 4 positive roots, 2 positive and 2 imaginary roots, or 4 imaginary roots. I is false. II is false in the first option. III is true in the third option.

**22. A.** or or or .

**23. E**. , so the graph is one of two lines intersecting at .

**24. D**.

**25. C.**

**26. B.** In order for the two solutions to be distinct and real, we must have or . For the roots to positive, we must have that their sum and product are positive, meaning that and . The intersection of these two inequalities is .

**27. B.** Since constants are insignificant as x becomes very large or small, the asymptote is given by

**28.** **B.** This would be a square of side length 3, so .

**29. A.** . , and the sum is -16.

**30. C**. Since by definition, this just evaluates to