In problems 1 through 4, write out the polynomial that has the listed factors:

Example: (x), (x-1) ANS: x2-x

1. (x-2), (x+3) Answer: $x^{2}+x-6$

2. x, (x-2), (x-1) – Answer: $x^{3}-3x^{2}+ 2x$

3. (x-2i), (x+2i) Answer: $x^{2}+ 4$

4. x, (x-1), (x+1), (x-2) – Answer: $x^{4}-2x^{3}-x^{2}+2x$

In problems 5 through 8, write the polynominal having the listed roots:

5. $i $ Answer: a=1

6. 2, 1, -1 Answer: 2, 2 -1

7. 1, 3, 2, -1 Answer: a=3

8. -2, +3, I Answer: a=1

In problems 9 through 11, use synthetic substitution to find f(-3) and f(4).

 

In problems 12 through 15, you are given a polynomial and one of its factors. Find the remaining factors of the polynomial. Some factors may not be binomials.



|  |  |
| --- | --- |
| 12.) | (x+1)(x-2)(x+4) |
| 13.) | (x-1)(x+3)(x+5) |
| 14.) |  |
| 15.) | $$\left(x^{2}+5\right)\left(1-x\right)\left(1+x\right)\left(-x+2\right)$$ |

Answer the following questions for the models below:

**Model A:** P=5000-1000/(t-1), 1 < t < 11, where P is in millions of dollars and t is in years (the expression (t-1) is only the denominator of 1000, 5000 is a whole number)

**Model B:** P=5(t-1)^3, 1 < t< 11, where P is in millions of dollars and t is in years.

1.) Find the Profit given by each model for 3 values of t each

2.) Which model is more desirable, why?

3.) Which model is more reasonable, why?