Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Period \_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Find *all* roots of the polynomial, then graph the polynomial on the given axes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1.** | *x* 3 + *x* 2 – 4*x* – 4 |                 | **2.** | 6*x* 3 + 11*x* 2 – 6*x* – 11 |
|  |  |  |  |  |
| **3.** | *x* 3 + 2*x* 2 – 4*x* – 8 |  | **4.** | -*x* 3 + 3*x*2 + *x* – 3 |
|  |  |  |  |  |
| **5.** | 2*x* 3 – 4*x*2 – 4*x* + 8 |  | **6.** | 2*x* 3 – 5*x* 2 – 4*x* + 10 |
|  |  |  |  |  |

Write a polynomial that fits the given description.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **7.** | The only roots are*x* = 3, -2, and 1 |           | **8.** | The only roots are*x* = 5 (multiplicity 1) and -4 (multiplicity 2) |
|  |  |  |  |  |
| **9.** | The only roots are*x* = 5, -3, ½, and ¾The *y*‑intercept is 90  |  | **10.** | The graph is shown below: |
|  |  |  |  |  |
| **11.** | The graph is shown below.(Note that the *y*‑axis has a scale this time!) |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |