

### Exercise Set 3.1

1.  $\frac{1}{2}x^3; \frac{1}{2}; 3$ ; cubic
3.  $0.9x; 0.9; 1$ ; linear
5.  $305x^4; 305; 4$ ; quartic
7.  $x^4; 1; 4$ ; quartic
9.  $4x^3; 4; 3$ ; cubic
11. (d)
13. (b)
15. (c)
17. (a)
19. (c)
21. (d)
23. Yes; no; no
25. No; yes; yes
27.  $-3$ , multiplicity 2;  $1$ , multiplicity 1
29.  $4$ , multiplicity 3;  $-6$ , multiplicity 1
31.  $\pm 3i$ , each has multiplicity 3
33.  $0$ , multiplicity 3;  $1$ , multiplicity 2;  $-4$ , multiplicity 1
35.  $3$ , multiplicity 2;  $-4$ , multiplicity 3;  $0$ , multiplicity 4
37.  $\pm\sqrt{3}, \pm 1$ , each has multiplicity 1
39.  $-3, -1, 1$ , each has multiplicity 1
41.  $\pm 2, \frac{1}{2}$ , each has multiplicity 1
43. False
45. True