

For each expression, (a) determine if it is a polynomial in one variable (yes/no). *If yes*, (b) name its degree and (c) leading coefficient. Place the answers in the text box below.

1) $r^5 - 3r^4 + 2r + rq^5$

2) $3n^8 - 2n^4 + n^2 - 11n + 2$

3) $\frac{3}{z^2} + \frac{1}{z}$

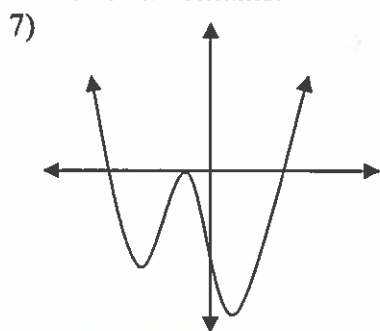
4) $\frac{y}{5} + \frac{4}{9}$

5) $x^2 + (3 - 2i)$

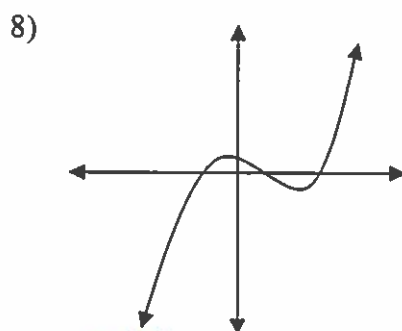
6) $9b - 2b^5 + 3b^4 - b^3 - 7b^8$

1a) <u>No</u>	2a) <u>Yes</u>	3a) <u>No</u>	4a) <u>Yes</u>	5a) <u>No</u>	6a) <u>Yes</u>
b) _____	b) <u>8</u>	b) _____	b) <u>1</u>	b) _____	b) <u>8</u>
c) _____	c) <u>3</u>	c) _____	c) <u>1/5</u>	c) _____	c) <u>-7</u>

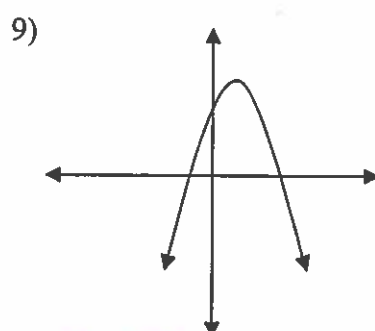
For each graph below, determine (a) if its degree is even or odd, (b) its end behavior and (c) the number of real zeros it contains.



- (a) even
(b) $(-\infty, +\infty)$
(c) 3



- (a) odd
(b) $(-\infty, +\infty)$
(c) 3



- (a) even
(b) $(-\infty, -\infty)$
(c) 2

Use the functions; $f(x) = 4x - 13$, $g(x) = 3x^2 - 2x + 7$ and $h(x) = x^3 - 2$ to find the following...

10) $g(5)$
 $= 3(5)^2 - 2(5) + 7$
 $g(5) = 72$

11) $h(-5)$
 $= (-5)^3 - 2$
 $h(-5) = -127$

12) $f(y-3)$
 $= 4(y-3) - 13$
 $= 4y - 12 - 13$
 $f(y-3) = 4y - 25$

13) $h(3a^4)$
 $= (3a^4)^3 - 2$
 $h(3a^4) = 27a^{12} - 2$

14) $7f(x)$
 $= 7(4x - 13)$
 $7f(x) = 28x - 91$

15) $3g(2b)$
 $= 3[3(2b)^2 - 2(2b) + 7]$
 $= 3[12b^2 - 4b + 7]$
 $3g(2b) = 36b^2 - 12b + 21$

16) $-9[f(w+1)]$
 $= -9[4(w+1) - 13]$
 $= -9[4w + 4 - 13]$
 $= -9[4w - 9]$
 $= -36w + 81$

17) $g(x-2)$
 $= 3(x-2)^2 - 2(x-2) + 7$
 $= 3(x-2)(x-2) - 2x + 4 + 7$
 $= 3(x^2 - 4x + 4) - 2x + 11$
 $= 3x^2 - 12x + 12 - 2x + 11$
 $= 3x^2 - 14x + 23$