3)

	a		b		c		d		e		f		g	
$f'(x)$	−	0	+	+	0	−	−	0	+	+	0	+		
$f(x)$	↘	$f(a)$	↗		$f(c)$	↘		$f(e)$	↗		$f(g)$			

The derivative is largest at b. (steepest tangent line at b)
The derivative is smallest at d. (least steep tangent line at d)

(B) $f \nearrow$ (a,c), (e,∞).

$f \searrow$ $(-\infty,a)$, (c,e).

f has relative maximum at $(c, f(c))$.

f has relative minima at $(a, f(a))$ and $(e, f(e))$.

f has horizontal tangents at A, C, E. and G.

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4) $s = (t^3+1)^2$

$v(t) = s' = 2(t^3+1)(3t)$

$v(t) = s' = 6t(t^3+1)$

$v(1) = 6(1)((1)^3+1)$

$= 6(2)$

$= 12$

12 ft/second

5) $f(x) = \dfrac{x-4}{x^2-7}$

$f'(x) = \dfrac{(x^2-7)(1)-(x-4)(2x)}{(x^2-7)^2}$

$f'(x) = \dfrac{x^2-7-2x^2+8x}{(x^2-7)^2}$

$f'(x) = \dfrac{-x^2+8x-7}{(x^2-7)^2}$

horizontal tangent: $f'(x)=0$

$-x^2+8x-7=0$

$x^2-8x+7=0$

$(x-7)(x-1)=0$

$x=7,\ x=1$

$f(7) = \frac{1}{14}$

$f(1) = \frac{1}{2}$

$(7, \frac{1}{14})$

$(1, \frac{1}{2})$