ign Charts **Name:**_____ **Date:**_____

Homework

Let's use the function $v(t) = 2e^t t^2 - 10te^t + 12e^t$

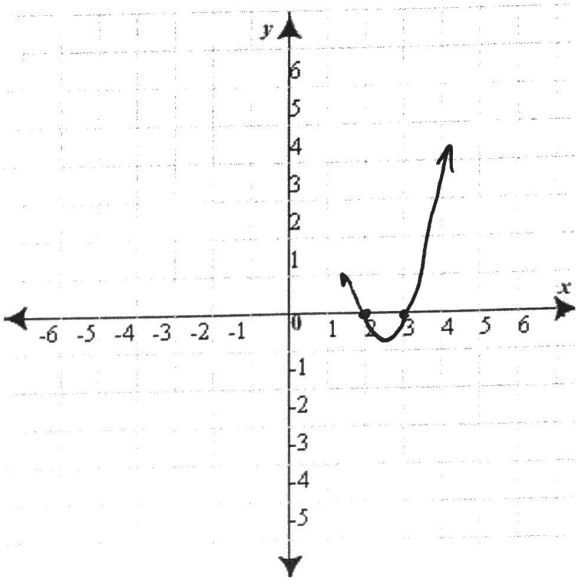
When is the particle at rest?

$v(t) = 2e^t[t^2 - 5t + 6]$

$0 = 2e^t(t-3)(t-2)$

no zero

$t = 3 \quad t = 2$



When is the particle moving to the right? Left?

	$-\infty$	(+) 2	(−) 3	(+) ∞
$(t-3)$	−	−	+	
$(t-2)$	−	+	+	
$2e^t$	+	+	+	

Right: $(-\infty, 2)$ $(3, \infty)$

Left: $(2, 3)$

Let's use the position function $p(x) = x^5 + 3x^4 - 10x^3$

$p(x) = x^3(x^2 + 3x - 10)$

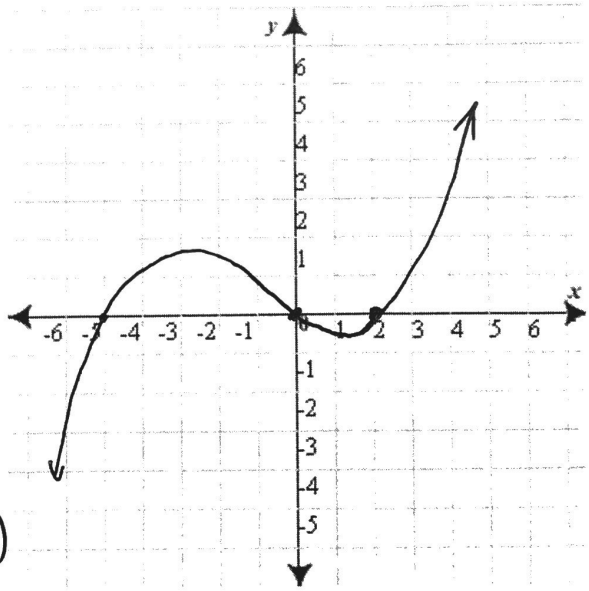
$p(x) = x^3(x+5)(x-2)$

When is the particle at the origin?

$p(x) = 0$

$0 = x^3(x+5)(x-2)$

$x = 0 \quad x = -5 \quad x = 2$



When is the particle to the right of the origin?

Position is positive

	$-\infty$	(−) −5	(+) 0	(−) 2	(+) ∞
x^3	−	−	+	+	
$(x+5)$	−	+	+	+	
$(x-2)$	−	−	−	+	

Right: $(-5, 0)$ $(2, \infty)$