(2) Find the intervals on which $y = x^3 - 27x + 36$ increases and decreases.

$$\frac{dy}{dx} = 3x^2 - 27 = 3(x^2 - 9) = 3(x+3)(x-3) = 0$$

Critical points: $x = -3$, $x = 3$

	-3		3	
$3(x+3)$	$-$	$+$		$+$
$(x-3)$	$-$		$-$	$+$
$f'(x) = 3(x+3)(x-3)$	$+$	$-$	$+$	$+$

Function increases on $(-\infty, -3) \cup (3, \infty)$
Function decreases on $(-3, 3)$

(6) Find the intervals on which $y = e^x - x$ increases and decreases.

$$\frac{dy}{dx} = e^x - 1 = 0$$

$x = 0$ is the only solution of $e^x - 1 = 0$, so it's the only critical point.

	0	
$\frac{dy}{dx}$	$-$	$+$

Function decreases on $(-\infty, 0)$ and increases on $(0, \infty)$