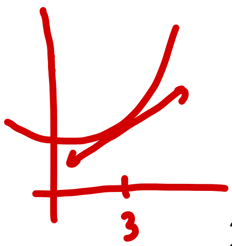
Key

5 for 5! The Final Review!

True or False:



1) If $g(x)$ is concave up, then using the tangent line at $x = 3$ to approximate $g(3.1)$ will produce an overestimate.

False; tangent lines are below the curve when the curve is concave up so the approx is an underestimate

2) Selected values of the derivatives of a twice-differentiable function $f(x)$ are shown in the table.

$f(x)$ has a relative minimum at $x = 2$.

x	0	1	2	3
f′(x)	5	-1	0	-2
f′′(x)	1	3	4	-7

True by 2^{nd} derivative test!
$f'(2) = 0 \quad f''(2) > 0$

3) If $g(x) = \int_3^{x^2} f(t)dt$, then $g'(x) = f(x^2)$.

False; $g'(x) = 2x \cdot f(x^2)$

4) If a curve is increasing, then a left Riemann sum gives an overestimate of the area under a curve.

False; underestimate

5) $\int f'(7 - 2x)dx = -\frac{1}{2}f(7 - 2x) + C$

True;

$u = 7 - 2x$
$du = -2\,dx$

$-\frac{1}{2}\int f'(u)\,du = -\frac{1}{2}f(7-2x) + C$