Name:_____

An astronaut's weight (in N) is:
$w = \frac{3.2\times10^6}{6400+h}$,
where h is the height above sea level (in km).

If h is increasing at 7 km/s, how fast is w changing when $h = 1600$ km?

$\frac{dh}{dt} = 7 \qquad h = 1600$

$w = 3.2\times10^6 (6400+h)^{-1}$

$\frac{dw}{dt} = -3.2\times10^6 (6400+h)^{-2} \frac{dh}{dt}$

$= -3.2\times10^6 (6400+1600)^{-2} (7)$

$= -0.35 \ \frac{N}{s}$