PHY203
FINAL, Part IV
December 14, 2005

NAME:_____
ID#:_____
Section 1pm 4pm 5pm Honors

	1	2	3	4	5	6	7	8	9	10
A										
B		X		X	X	X	X		X	
C	X							X		
D										
E			X							X

Multiple choice questions:

Shade the right box above.

1) A satellite orbits earth at a distance $3R_E$ from the surface. Its escape speed from this orbital position is:

a) 11.2 km/s
b) 22.4 km/s
c) 5.60 km/s
d) 44.8 km/s
e) 2.80 km/s

$g = \frac{GM_E}{R_E^2}$

U+K @ orbital position = 0+0 @ ∞

$-\frac{GM_E m}{4R_E} + \frac{1}{2}mv^2 = 0 \rightarrow v = \sqrt{\frac{2GM_E}{4R_E}}$

$= \sqrt{\frac{2gR_E}{4}} = 11.2/2$ km/s

2) If the sun underwent a gravitational collapse and its radius would decrease 10 times, the surface gravity of the sun would:

a) Increase 10 times.
b) Increase 100 times.
c) Increase 1,000 times.
d) Remain constant.
e) Decrease 100 times.

$g = \frac{GM_S}{R_S^2}$ Thus, if $R_S \rightarrow R_S/10$

$\rightarrow g \rightarrow 100\,g$