c) White dwarf: $\rho \sim 10^9 \ kg \ m^{-3}$

For $M = 1 M_\odot$:
$$\frac{4}{3}\pi r^3 \rho = M$$
$$r^3 = \frac{3M}{4\pi\rho}$$
$$r = \left(\frac{3M}{4\pi\rho}\right)^{1/3}$$
$$= \left(\frac{3 \times 2 \times 10^{30}}{4\pi \times 10^9}\right)^{1/3} = 8 \times 10^6 \ m$$

and $r_s = 3 \times 10^3 \ m$
$$z = \frac{1}{2} \times \frac{3 \times 10^3}{8 \times 10^6} \sim 2 \times 10^{-4}$$

d) Neutron star: $r \sim 6 r_g$

~~M~~

$$z = \frac{1}{\sqrt{1 - 1/3}} - 1 = 0.14$$

This effect can actually be measured in all of these systems. Easiest in higher masses. Sun probably hardest, due to thermal effects.