What is 1 AU ?

A	The average Moon-Earth distance - 384,400 km	0	✕
B	The average Earth-Sun distance - 150 M km	0	✓
C	The size of the solar system	0	✕
D	The radius of Jupiter	0	✕

What statement does *NOT* apply to the concept of sphere of influence (SOI)?

A	Within the SOI, we can consider only the two-body problem to compute the trajectory	0	✕
B	To compute the size of the SOI, we study the ratio of the perturbation in an heliocentric frame and in a planetocentric frame	0	✕
C	Within the SOI, there are at least two massive bodies	0	✓
D	The SOI depends on the average distance of the massive object and their relative mass	0	✕

On a Hohmann transfer from Earth to Venus (i.e. sunwards), what would be the trajectory within Earth's SOI?

A	A circle	0	✕
B	A parabola	0	✕
C	An ellipse	0	✕
D	An hyperbola	0	✓

What is the correct equation for the hyperbolic excess velocity ?

A $v_d^2 = (v_d^{\infty})^2 + v_{Esc}^2$. 0 ✓

B $v_d = (v_d^{\infty}) \; + v_{Esc}$. 0 ✕

C $v_d^2 = (v_d^{\infty} + v_{Esc})^2 +$. 0 ✕

D $v_d = v_d^{\infty}$. 0 ✕

On a Hohmann transfer from Earth to Venus (i.e. sunwards), how should the departure hyperbolic excess velocity and the planetary velocity be aligned?

A	Parallel, in the same direction	0	✕
B	Perpendicular, with the hyperbolic excess velocity pointing away from the Sun	0	✕
C	Parallel, but in opposite direction	0	✓
D	Perpendicular, with the hyperbolic excess velocity pointing towards the Sun	0	✕

What is the heliocentric velocity right after leaving the SOI?

A $V_D = V_P + v^{\infty}$. 0 ✓

B $V_D^2 = V_P^2 + (v^{\infty})^2$. 0 ✕

C $V_D = V_P + v^{\infty} - 2v^{\infty} V_P \cos(\beta)$. 0 ✕

D $v_d^2 = (v_d^{\infty})^2 + v_{Esc}^2$. 0 ✕

On a Hohmann transfer from Earth to Venus (i.e. sunwards), what would be the trajectory in the heliocentric phase?

A	A circle	0	✕
B	A parabola	0	✕
C	An ellipse	0	✓
D	An hyperbola	0	✕

Is the treatment of the arrival phase similar to the departure phase?

A	No, it is always an elliptical orbit	0	✕
B	Yes, with the arrival hyperbolic excess velocity defining the semi-major axis of the planetocentric phase	0	✓
C	No, it is always a parabolic orbit.	0	✕
D	No, the total mecanical energy is not conserved	0	✕

How can the probe get gravitationally bound to the planet on arrival?

A	It will always be bound after entering the arrival SOI	0	✕
B	It can perform a braking Delta-v using its thrusters	0	✓
C	It can perform an aerocapture maneouvre	0	✓