

(1) [5] Determine the exact value of  $\arcsin(-1/\sqrt{2})$ .

(2) [5] Determine the derivative and simplify:  $H(x) = (1 + x^2) \arctan(x)$ .

**(3) [5]** Simplify  $\cos(\arctan x)$ . Your final simplified answer should not contain any trigonometric or inverse trigonometric functions.