



- 1 $f(x) = x^4 + (-2a^2)x^2 + a^4$
- 2 $g(x) = cf(x)$
- 3 $c = \frac{a\sqrt{3}}{a^4}$
 $= 0.0679617697939$
- 4 $a = \sqrt{\frac{15}{\sqrt{3}}}$
 $= 2.94283095638$
- 5 $2 \int_0^a g(x) dx - a^2\sqrt{3}$

$$= \boxed{1}$$