

Exercise 2.6.6

Does $S(f, g)$ depend on which monomial order is used?

Yes. Example:

```
>>> var('x, y')
      (x, y)
>>> load("~/Desktop/buch.sage")
>>>
>>> f=2*x^2 - x*y - 2*y^2 + 2*x + 4*y;
      g=-2*y^2 - x + y - 1;
>>> S0=Spoly(f,g, 0) # 0 for lex order
>>> S1=Spoly(f,g, 1) # 1 for grlex order
>>> expand(S0)
      
$$-2xy^2 + \frac{1}{2}xy - y^2 + 2y$$

>>> expand(S1)
      
$$-\frac{1}{2}xy^3 - y^4 - \frac{1}{2}x^3 + \frac{1}{2}x^2y + xy^2 + 2y^3 - \frac{1}{2}x^2$$

>>>
```