1)

a)

Kp = 100

|  |  |  |
| --- | --- | --- |
| Omega = 5 | Omega = 10 | Omega = 15 |

A screen shot of a graph

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Description automatically generated

The difference between the peaks is minimised at omega = 10 and this is because this is the natural frequency of the plant

b)

A screen shot of a graph

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The derivative is in phase with the direction that the output needs to go, meaning that it makes the response move slightly faster, meaning that the output gets closer to the input.

c)

A screen shot of a graph

Description automatically generatedA screen shot of a graph

Description automatically generated

Pure P control better rejects the noise, which is good for most applications. The derivative control amplifies the noise.

d)

A diagram of a mathematical process

Description automatically generated

2)

A hand holding a notebook with math equations

Description automatically generated



3)

A notebook with writing on it

Description automatically generated

